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ABSTRACT

The guideline, an indepth focus on one of the 15 U.S. Office of Education (USOE) career education clusters, provides instructors with information to support effective career decision making and occupational preparation. The first section provides a perspective of career education as applied to occupations in the guidelines (includes explanations of the USOE Model System, a career education/cluster system, and the World of Work function approach). The second section contains: procedures used to define the Dictionary of Occupational Titles (DOT) cluster job titles; listings of job titles representing occupational areas, primary occupations, and occupational families within the cluster; and job analyses describing major job function and duties of the Communications Media Occupations (CMO) from the DOT. A third section provides: purposes, learner characteristics, objectives, and activities for the career orientation (grades 7-9), career exploration (grades 9-10), and occupational preparation phases (grades 11-14, graphic communications); an articulation model for the preparation phase; an annotated bibliography of selected curriculum materials; four instructional strategies; learning activities evaluation model; and a list of primary occupations by school subjects. A final section selectively reviews the elements needed in constructing a successful career education system in the CMO cluster. (Author/MS)

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CAREERS IN COMMUNICATIONS MEDIA

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INSTRUCTOR GUIDELINE

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FOREWORD

The U.S. Office of Education has recently undertaken major efforts to reduce the mismatch between education/training offered individuals and worker requirements faced as they enter the world of work. One effort was the creation of 15 career education clusters designed to facilitate the delivery of career education. These clusters are representative of occupational opportunity in the world of work. As designed, they serve and are intended to support the emerging state and local educational agency career education program activities.

The Oregon State Department of Education, under a grant from the U.S. Office of Education, has worked on the development of the Communications Media Occupations (CMO) cluster curriculum guideline. This Guideline has been prepared as a focus on one of the 15 USOE designed clusters. Its function is to better serve the learner by providing state and local education agencies information to support effective:

- Career decision-making that includes the learner's values of the citizen, family, leisure and occupational roles involved in a career.
- Occupational preparation — vocational, technical, professional — of today's learner for tomorrow's world.

The content was initially identified and selected by project staff and field test site personnel as appropriate for career education instruction. The materials retained were evaluated by field test site personnel as:

- Contributing to the achievement of purposes and objectives of a particular career education phase.
- Efficient in terms of learner and teacher effort and time.
- Not requiring resources and support beyond what might be reasonably expected from state and/or local education agencies.

This Guideline has focused on the **In-Depth Exploration** of the CMO cluster. Other phases are included to assist the user in articulating career education instruction at the local level. Field test site users report they have found the CMO cluster Guideline unique in that it permitted them to:

- Extend the procedures used to identify the CMO cluster occupations to all 15 USOE clusters.
- Interrelate existing Department of Labor information, i.e., Dictionary of Occupational Titles, Occupational Outlook Handbook and Employment Service tools and methodology to the CMO cluster.
- Relate the cluster scheme approach to the National Institute of Education/Appalachia Educational Laboratory developed Career Information System and Career Decision-Making program.

It is the hope of those who have contributed to this effort that users will be better able to provide career education instruction to the USOE career education effort and, specifically, to the Communications Media Occupations cluster.

ACKNOWLEDGEMENT

This publication is one of a series developed by the U.S. Office of Education to facilitate the delivery of career education at the state and local level. The development and field testing of any such publication depends upon the assistance, advice, cooperation and support of many individuals and agencies. The Oregon State Department of Education, Division of Instructional Support, Career Education and Vocational Education Unit and the project staff wishes to thank all who have contributed to the national, state and local level activities of the project

In particular, we wish to thank those individuals, agencies, businesses and organizations whose input as the National Advisory Review Group assisted in the development of the field test edition of the Communications Media Occupations Cluster Guideline.

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The Guideline **Preparation** level is concentrated in the area of Graphic Communications Occupations. In this endeavor, the project has benefited from the support and encouragement of the staff of the Kodak Graphic Communications Industry Manpower Study of the Seventies. Bill Flack of Kodak and Dr. Gene Strandberg, Project Staff Coordinator, were particularly helpful in arranging for the evaluation of Graphic Communications Education Program materials developed by Dr. Page Crouch of Clemson University. These materials were developed in cooperation with Mr. Bill Treadaway of The Printing Industries of the Carolinas (PICA) and the South Carolina State Department of Education.

Various materials included in the Guideline have been utilized and/or reviewed by cooperating educators in more than 10 states and Canada. Inflation and fixed budgets, however, limited the formal field test effort for the entire Guideline to schools in the states of California, Oregon, Utah and Washington.

Particular thanks go to the administrators, staff, students and citizens of:

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Fremont Unified School District (CA)
Martha Hale Junior High School
San Diego Unified School District (CA)
Sacramento High School
Sacramento Public Schools (CA)
Adams High School
Portland Public Schools (OR)
Madison High School
Portland Public Schools (OR)
Olympus High School
Granite School District (UT)
Interlake High School
Bellevue Public Schools (WA)

Their cooperation with this project and that of the Appalachia Educational Laboratory has contributed significantly to this initial test of the fit of U.S. Office of Education and National Institute of Education career education program development efforts.

Finally, we would acknowledge and praise the behind-the-scene support of the U.S. Office of Education personnel — Project Officer, Project Monitor and Contracts Officer. Hopefully, the product developed with their assistance will fulfill the anticipation of Commissioner of Education, T. H. Bell, when he, as Superintendent of the Granite Public Schools in Utah, agreed to participate in the field testing of the Communications Media Occupations cluster Guideline.

W. Lee Foust, Jr.
Project Director

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THE PERSPECTIVE

This section of the Guideline provides a perspective for effective career **Decision-Making** and career **Preparation**. It further covers:

- Career Education — What It Is
- Career Education — Its Function
- Career Education — Who It Serves
- Career Education — Institutional Perspectives
- The USOE Model Career Education System
- Characteristics of a Career Education/Cluster System
- Career Education — The WOW Function Approach

CAREER EDUCATION — WHAT IT IS

Career education is an instructional system designed to further the developmental process allowing individuals to prepare for the citizen, family, leisure and occupational roles they will experience during their career. Career education, therefore, has a contribution to make to the development of all career roles at all levels of education — preschool through adult life.

Grades K - 6

In a career education system, the kindergarten - grade 6 learning activities are redesigned. These activities now include information on the range of occupational roles possible in the world of work. They serve to illustrate the interrelationship of career roles and provide an understanding of the value of work to the individual, the family and the society in which the learner is a member.

Grades 7 - 10

During grades 7 - 10, career education learners explore selected occupational groupings, try out talents and interests and make tentative occupational choices. These activities provide an orientation to the career decision-making process and lead to the probable selection of an occupational focus for entry into the world of work.

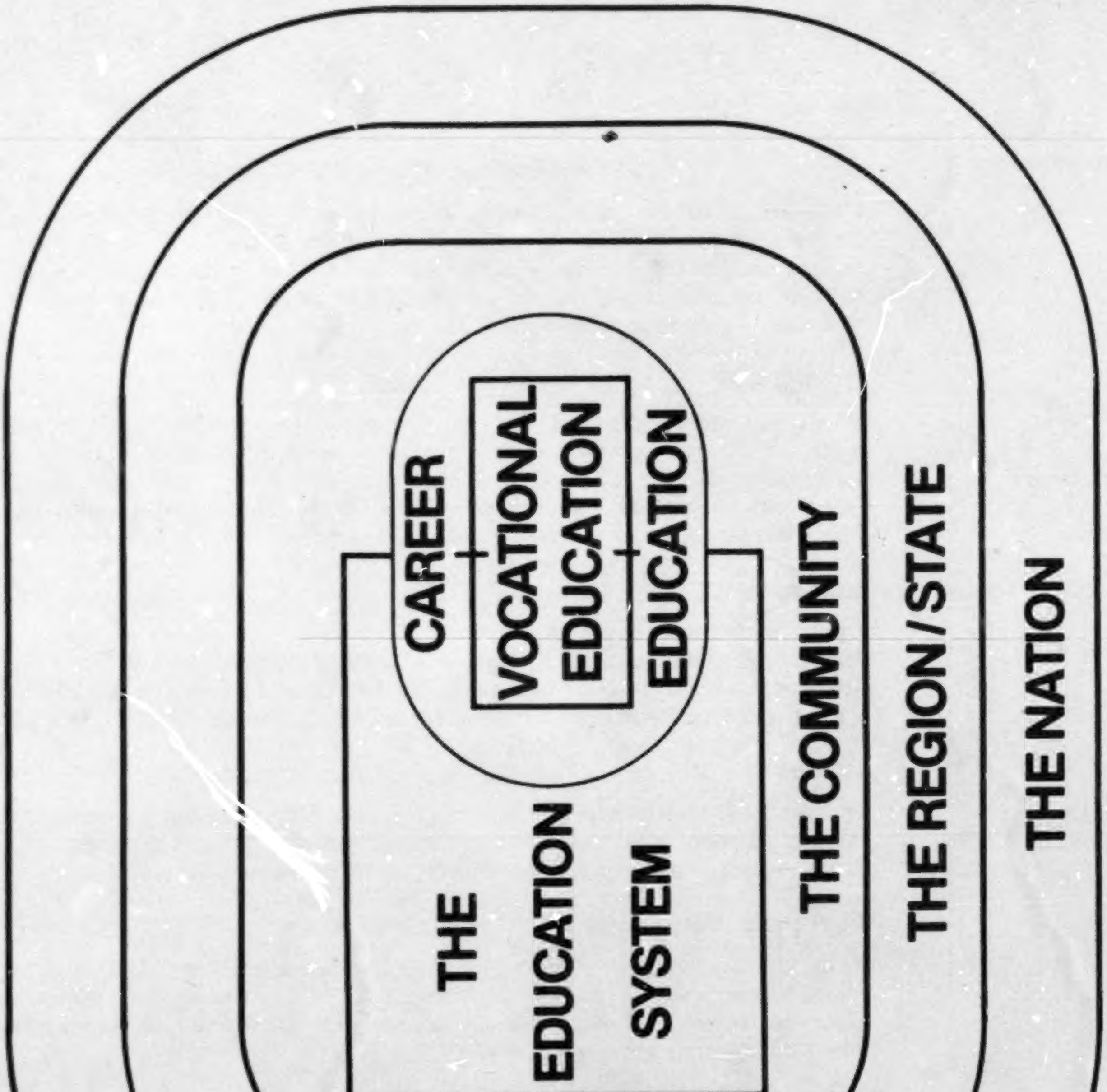
Grades 11 - 12

Grades 11 and 12 provide opportunities in occupational preparation and entry into the selected career. Preparation level learning activities are designed to permit entry directly into the world of work and/or into post-secondary education.

Post-Secondary

Post-secondary programs provide specialized training, upgrading of skills and/or retraining opportunities throughout a learner's career. These programs build upon vocational/technical school, community college, college/university, on the job and adult-continuing education programs.

Career education is not a separate course nor an isolated activity in the curriculum. It is a current, ongoing activity-oriented process infused throughout all curriculums, educational institutions and communities in which it exists. It is designed to help the individual develop the skills and knowledge for effective participation in all the life roles that make up a career in our society.


CAREER
VOCATIONAL
EDUCATION
EDUCATION
THE
EDUCATION
SYSTEM
THE COMMUNITY
THE REGION / STATE
THE NATION

4A

CAREER EDUCATION — ITS FUNCTION

There is need today for relevant occupational information that will permit each learner to rationally relate to values independently held for the citizen, family and leisure roles associated with a given career choice. The provision of occupational information will then permit the learner to define alternative career choices and to responsibly select and prepare for a tentative career.

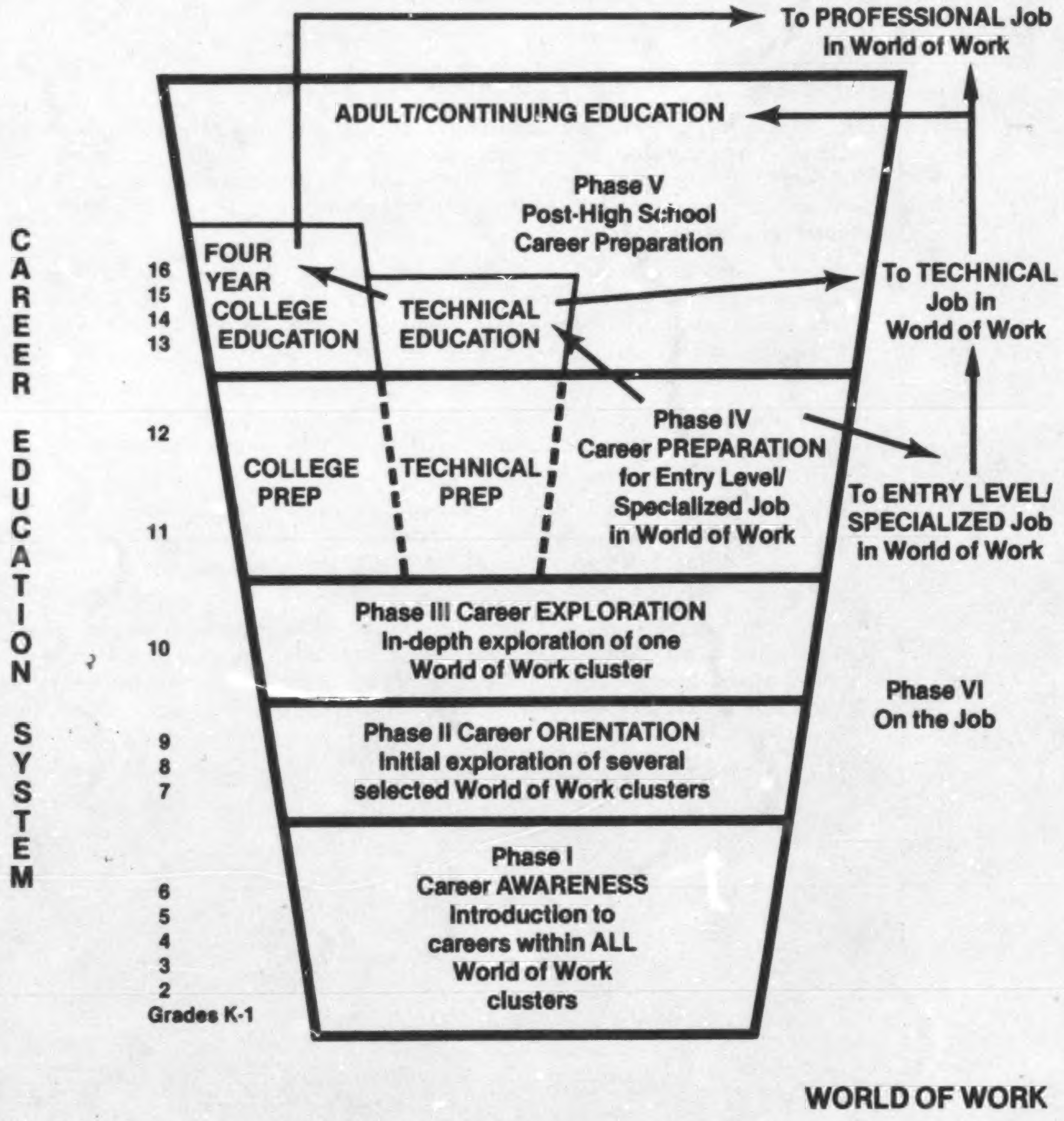
We can no longer act as if the learner will be born, educated, live out an adult life and die in a single community. Information as to the careers that will probably exist in the community, region, state and nation (see illustration opposite) are the only foundations upon which any community can ultimately build a functional career education system that may serve the needs of today's learners in tomorrow's society.

Because of the current deprivation of occupational role information in virtually all K - 12 curricula, it will be necessary to emphasize the infusion of occupationally relevant information wherever and whenever possible.

> The function of career education is to provide instruction designed to further the developmental process whereby individuals prepare for the citizen, family, leisure and occupational roles they will experience in society.

A community needs to organize its resources — in and out of school — to effectively provide learners the opportunity to develop communication skills, an awareness of self and the physical and social world in which they live. This goal can be realized as learners talk, write, read and learning activities designed to prepare them for their career not only in today's society, but tomorrow's.

INSTITUTIONAL PERSPECTIVE OF CAREER EDUCATION (PHASES I-V) RELATIONSHIP TO WORLD OF WORK (PHASE VI)


To PROFESSIONAL Job in World of Work
ADULT/CONTINUING EDUCATION
Phase V Post-High School Career Preparation
FOUR YEAR COLLEGE EDUCATION
TECHNICAL EDUCATION
To TECHNICAL Job in World of Work
CAREER EDUCATION SYSTEM
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
Grades K-1
COLLEGE PREP
TECHNICAL PREP
Phase IV Career PREPARATION for Entry Level/ Specialized Job in World of Work
To ENTRY LEVEL/ SPECIALIZED Job in World of Work
Phase III Career EXPLORATION In-depth exploration of one World of Work cluster
Phase VI On the Job
Phase II Career ORIENTATION Initial exploration of several selected World of Work clusters
Phase I Career AWARENESS Introduction to careers within ALL World of Work clusters
WORLD OF WORK

5A

CAREER EDUCATION — WHO IT SERVES

Career education, if it is to function, must serve the learner first in terms of career decision-making and secondly in terms of providing occupational role preparation.

Career education programs that serve the needs of today's learners in tomorrow's society, take place in the local community. These programs utilize community and educational system resources, including vocational education, to provide learners instruction that is designed to assist them to select and to experience a successful career.

CAREER EDUCATION — INSTITUTIONAL PERSPECTIVES

Educational institutions responded to the call for CAREER EDUCATION by developing a perspective of what that concept meant to them. The illustration opposite essentially represents the major characteristics of the majority of these institutional perspectives.

General agreement was commonly observed for Phase I-IV, Career Awareness, Orientation, In-Depth Exploration and Preparation. The contribution to career education of the Adult/Continuing Education aspect of Phase V — post-high school preparation — was not, however, always recognized in the manner or to the degree illustrated.

ANTICIPATED OUTCOMES FOR "USOE MODEL" CAREER EDUCATION SYSTEM

Institutions (CEIs)	Learners (CELs)
CEI PHASE VI (ON THE JOB) PROGRAMS	The CEL "graduate" is employed in the career cluster/occupational category. The CEL "graduate" — leaves the CEI.
CEI PHASE IV/V (PREPARATION) PROGRAMS	The CEL becomes employable in a career cluster/occupational category. The CEL enters a career cluster/occupational category **Preparation** program.
CEI PHASE III (IN-DEPTH EXPLORATION) PROGRAMS	The CEL selects a career cluster/occupational category **Preparation** program. The CEL explores occupational categories within a career cluster in depth.
CEI PHASE II (ORIENTATION) PROGRAMS	The CEL selects a career cluster for **In-Depth Exploration**. The CEL explores the career clusters of interest. The CEL selects several career clusters of interest for initial exploration.
CEI PHASE I (AWARENESS) PROGRAMS	The CEL becomes **Aware** of the range of occupational opportunity within the career education clusters that represent the world of work.

THE "USOE MODEL" CAREER EDUCATION SYSTEM

The world of work in our society is both diverse and complex. The Dictionary of Occupational Titles, probably the most complete and valid description of that world, lists more than 20,000 individual jobs. Obviously, dealing with each of these jobs would be impossible for the career educator or learner. The only administratively feasible solution when designing and implementing a career Exploration program, or when providing other aspects of career education, is to group these jobs into a series of manageable clusters. While it is not possible to deal with 20,000 or more separate jobs, it would be feasible to deal with some 15 or 20 broad career clusters that represent the occupational role alternatives within the world of work.

The U.S. Office of Education has, therefore, proposed that any approach to career clustering identify occupational content in terms of four basic characteristics:

1. The cluster scheme should encompass all the jobs in the Dictionary of Occupational Titles.
2. Each cluster should include jobs at all levels.
3. Each cluster should be related to an identifiable group of employers.
4. The clusters should be enduring over time, i.e., represent a continuing societal function.

Any career cluster scheme should, in addition to the above four characteristics, **be organized to be understood by the learner and the other individuals in the local community upon whom that emerging educational commitment will have its greatest impact — educational staff, parents and citizens.**

The illustration opposite shows the accomplishments anticipated for career education institutions and career education learners participating in a functional "USOE model" career education system.

CHARACTERISTICS OF A CAREER EDUCATION/CLUSTER SYSTEM

The need for a common approach to defining USOE career cluster occupations can help to implement a functional career education system at the local, state and national levels. As career education serves the needs of the learner, there is need for a common perspective that will relate the diverse efforts taking place.

The goal of a career **Awareness** program is that the learner should become aware of a range of occupational opportunity that is representative of the realities of the world of work. Meeting this need can be a major problem for elementary school curriculum developers and users — classroom teachers, community members and learners — unless an approach to representing the world of work is available.

The goal of a career **Exploration** program is that the learner select the occupational focus of the career he/she would prepare for in our society. The USOE model for career education/clusters is clearly focused upon the occupational "facts of life". It can communicate effectively the abilities, aptitudes, interests and life styles of individuals who find particular occupational roles fulfilling.

A problem develops in being able to find a perspective that will bridge the gap between the simpler needs of career **Awareness** and the necessary focus of occupational **Preparation** —vocational, technical or professional — upon the skills, knowledge and values that are recognized in society as indicators of being occupationally competent.

A career education/cluster system with the following characteristics would facilitate the delivery of career education at the state and local level:

1. The career **Exploration** phase (Orientation and In-Depth) uses a cluster scheme that relates both interests and aptitudes to career decision-making — it "bridges the gap" — between career **Awareness** and career **Preparation** learner characteristics.
2. The career **Awareness** phase allows for a developmental approach to understanding the world of work, thereby permitting greater opportunity for infusing or adapting existing elementary school practice to serve career education needs.
3. The career **Awareness** phase curriculum structure is designed to ready the student to use "clusters" effectively for career **Exploration** and **Decision-Making.**

CAREER EDUCATION — THE WOW FUNCTION APPROACH

Educational practice today is more capable of effectively providing functional occupational preparation than it is capable of providing a rational approach to career decision-making.

The function of career education is to serve today's learner by providing a perspective that is relevant for effective career decision-making and career preparation. For this reason the Communications Occupations cluster perspective initially builds upon career-relevant occupational preparation programs that research shows to be soundly based in the technology currently or in emerging use throughout the world of work. Current instructional technology can develop additional similar instruction as that need becomes evident.

Learners today have been deprived of information and learning activities that are representative of the realities of the world of work or experience in decision-making. The CMO cluster perspective focuses, therefore, upon the development/selection of a cluster scheme that will provide relevant occupational role information and enhance greater opportunities for learning in relation to career decision-making.

A Classification Approach

A review and analysis of currently available occupational classification and clustering schemes indicated that most were designed to serve the needs and be understood by the specialists using them in a particular field — census, economics, manpower, vocational education, etc. One classification scheme* (described by labor economist D. B. McKinlay) did appear to have the potential to be understood by nonspecialists and students. It was designed to group occupations in a way that endures over time and is NOT continually outdated by technological change.

Production Function (P) Occupations that deal with the processing of goods, materials and/or objects to be utilized by people in a society.

Direct Services Function (DS) Occupations that provide services directly to people in a society.

Distribution Function (D) Occupations that distribute goods and/or services for use by people in a society.

Organization Management Function (OM) Occupations that provide direction and control services for a specific world-of-work establishment, production or service unit in a society.

Technical Services Function (TS) Occupations that provide specialized/technical support services necessary to the function of the other occupations in a society.

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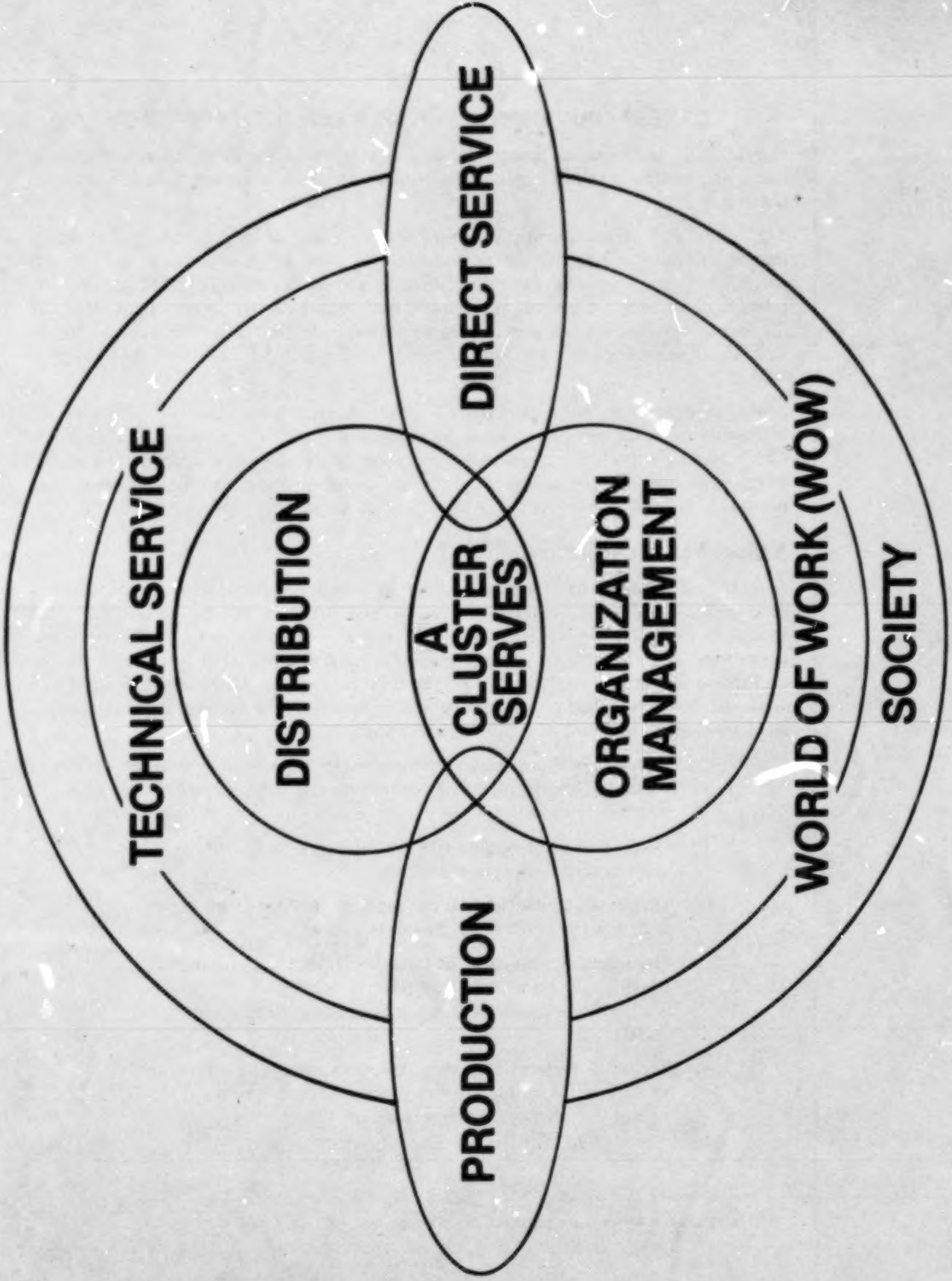
*D. B. McKinlay, **A Functional Classification of Occupations**, 1971, unpublished dissertation.


DIRECT SERVICE
TECHNICAL SERVICE
DISTRIBUTION
A
CLUSTER
SERVES
ORGANIZATION
MANAGEMENT
WORLD OF WORK (WOW)
SOCIETY
PRODUCTION

World of Work (WOW)

The basic concepts provided by McKinlay were adapted to create the World of Work (WOW) Function approach to organizing the occupational content of the Dictionary of Occupational Titles (DOT) in relation to the development of instruction at the career **Awareness** and career **Exploration** levels.

The stage is now set for the learner to discover that clusters are "just a group of occupations that serve the same world-of-work function and are put together to make it easier to explore the world of work." (See illustration on opposite page.)

The WOW Function approach does advocate assigning all **Preparation** level learners to the one occupational preparation program that can best provide training in the use of the technology(s) the chosen career demands.

The major subgrouping of the WOW function clusters — the **occupational areas** — were designed to assist the learner and career education institutions to identify, in general, the world-of-work settings — work establishments, production or service units — where the learner could explore the occupational alternatives of interest and potential for his/her career development.

The minor subgrouping of these clusters — the **occupational families** — in many instances transcend the world-of-work settings the learner explores. This is the consequence of forming occupational families on the basis of grouping occupations that have common worker function requirements to those of selected **primary occupations**.

Primary occupations within a cluster are those job titles identified as having **high employment potential** upon the basis of available manpower data. Occupational families designed and organized in this manner provide the learner expanded opportunity for future entry into the world of work.

The following definitions were developed to assign WOW Function Occupations to the 15 USOE career cluster titles:

Production Function Clusters (P)*— occupations involved in the processing of goods, materials and/or objects to be utilized by people.

- **Agri-Business and Natural Resources (AG)** cluster occupations are concerned with the production and/or management of the growth and reproduction of nonhuman animal and plant resources, and the extraction of nonrenewable natural resources, i.e., gas, minerals, oil, etc.
- **Construction (Cst)** cluster occupations are those necessary to the onsite production or remodeling (design through finish) of a structure — building, bridge, road, etc. — and the onsite "custodial" occupations (operations/-maintenance/repair) necessary to the function of such structures.
- **Manufacturing (Man)** cluster occupations are those involved in the production of goods — planning of purchase of raw materials through the processing of materials and storage of the finished product — at a site removed from the place of ultimate use and the onsite "custodial" occupations necessary to the function of such goods.

Direct Services Function Clusters (DS) — occupations that provide services directly to people.

- **Consumer Homemaking (C-H)** cluster occupations render direct service to the occupants or guests in households and/or institutionalized "household-like" settings.
- **Fine Arts and Humanities (FA)** cluster occupations render direct service to members of society by the gathering, analyzing and creatively representing the ideas and behavior of man through recorded media and/or the performing arts.
- **Health (H)** cluster occupations render health care services directly to humans and animals.
- **Hospitality and Recreation (HR)** cluster occupations render direct service to people by providing eating and sleeping accommodations and related onsite entertainment and recreational activities.
- **Personal Services (Per)** cluster occupations provide physical services (excluding health care) directly to a person or a pet.

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Distribution Function Clusters (D) — occupations that distribute goods and/or services for use by people.

- **Communications Media (CMO)** cluster occupations distribute messages **via** communications media (broadcast, graphic, line) message distribution systems, as well as provide onsite installation/maintenance of the equipment necessary to the function of the message distribution systems.
- **Marketing and Distribution (MD)** cluster occupations provide access to goods and services via promotion, sales and retail merchandising activities.
- **Transportation (T)** cluster occupations are those that are involved in the distribution of objects — living and nonliving — from place to place.

Organization Management Function Clusters (OM) — occupations that provide direction and control services for a specific world-of-work establishment, production or service unit.

- **Business and Office (Bus)** cluster occupations are those that provide direction and control services primarily via the use of data-related information, i.e., accountant, bookkeeper, clerk typist, general office clerk, office manager-supervisor, secretary, etc., in a specific WOW establishment, production or service unit.

Technical Services Function Clusters (TS) — occupations that provide specialized technical support services necessary to the function of the other clusters.

- **Environment (EN)** cluster occupations are those that permit society to effectively explore, manage and/or regulate utilization of the natural/man-made environment (excepting Marine), now and in the future.
- **Marine (Mar)** cluster occupations emphasize application of emerging technologies to permit more effective exploration, management and/or regulation of the marine environment, now and in the future.
- **Public Service (Pub)** cluster occupations provide those services necessary to accomplish the mission of local, county, state, regional or federal governmental agencies. These occupations provide the services desired or needed by individuals or groups within society and are performed through arrangements or organizations established by society, normally on a nonprofit basis and usually supported by tax revenues. (This cluster could include those military occupations that do not have equivalent nonmilitary occupational titles in the WOW.)

POTENTIAL OF WOW FUNCTION APPROACH

Elementary school curricula have not traditionally focused upon learning activities that were relevant to the occupational aspect of careers that learners might some day experience. The focus of instruction has shifted to serving the needs of the learner as a career decision-maker. The learner is ready to use clusters to "walk" through the world of work and to observe and explore occupational role alternatives.

The WOW function clusters were designed to assist learners to become aware of and to explore the world of work **outside** the school walls — NOT to become aware of and to explore just those occupational **Preparation** programs (vocational, technical, professional) that exist **within**. Now there is the probability of learners being exposed to many of the consequences of technological change.

The WOW function approach to organizing the occupational aspect of career **Awareness** and career **Exploration** instruction transcends any commitment to existing local occupational preparation programs, and assists the learner in a rational and systematic manner to more freely select the occupational **Preparation** program that is seen as best serving his or her career needs.

This approach to classifying occupations/clusters, therefore, offers much as a scheme to facilitate the delivery of career education, K-Adult:

1. It is simple and understandable by the nonprofessional user and student.
2. It supplements, not supplants, occupational classification systems used by institutions and professionals, thereby gaining access to valuable data in a cost-effective manner.
3. It encompasses all the jobs in the **Dictionary of Occupational Titles**, now and in the future.
4. It includes jobs at all levels, i.e., provides a career ladder perspective.
5. It relates occupations to identifiable groups of employers.
6. It assists staff in the redesign/selection of relevant career education learning activities.
7. It takes into consideration the effect of technological change over time by:
   - Providing **Awareness/Exploration** understandings and skills learners can use in later life.
   - Requiring minimal retraining of **Awareness/Exploration** staff.
   - Requiring minimal updating of **Awareness** and **Exploration** learning material.
8. It assists learners in the exploration of the world of work in a manner that does NOT involve prior commitment to a particular occupational preparation program perspective.

The stated purpose of the USOE cluster scheme was "to facilitate the delivery of career education." Resources to support this emerging commitment are severely limited. Use of the WOW Function approach to organizing occupations, and the USOE clusters for career **Awareness** and **Exploration** programs, appears most cost-effective. Learners can select from currently available occupational **Preparation** programs that meet their career needs.

Access to learner response data (K-Adult) now allows state and local school administrators and other decision-makers to assign priorities and focus limited resources upon the development of instruction to facilitate the delivery of career education.

A REVIEW

The task of providing meaning — defining and organizing the occupational content — for the Communications Media Occupations (CMO) cluster was guided by the U.S. Office of Education perspective — that **any** career cluster scheme should "facilitate the delivery of career education."

A facilitating cluster scheme is needed to assist learners in exploring the world of work **outside** the school walls — NOT to explore just those occupational **Preparation** programs — vocational, technical and/or professional — that exist **within**.

The **world-of-work function** approach discussed and applied to the CMO cluster allows the learner to explore the world of work in a manner that transcends commitment to a particular occupational **Preparation** perspective. It, thereby, prepares the learner to select more freely the occupational **Preparation** program — vocational, technical, professional — that is seen as best serving that person's career needs.

Resources to support the emerging commitment to career education are severely limited. Development of a total career cluster scheme, similar to that described in this **Guideline**, could be cost-effective. It would reveal those present-day occupational **Preparation** programs that are relevant to serving learners' career needs. This knowledge permits focusing available resources where they are judged most cost-effective, rather than attempting to develop a total career education system from the beginning.

JOB TITLES

This part of the Guideline contains:

- Procedures used to define the DOT cluster Job Titles;
- Listings of Job Titles representing occupational areas, primary occupations and occupational families within the cluster;
- Job Analyses that describe the major job function and duties of the CMO Primary Occupations from the Dictionary of Occupational Titles, Volumes I and II, (1965 Edition)
  - — The quality and level of detail provided in this approach was designed to meet the needs of exploratory career education.
  - — This level of analysis does not provide for preparation level programs.

APPALACHIA EDUCATION LABORATORY MATERIALS WORKER TRAIT GROUP DESCRIPTIONS BY DOT VOLUME II PAGE NUMBERS

DOT II Pg. No.	WTG No.	DOT II Pg. No.	WTG No.	DOT II Pg. No.	WTG No.	DOT II Pg. No.	WTG No.	DOT II Pg. No.	WTG No.
226	1	276	24	347	47	406	70	479	93
228	2	278	25	349	48	408	71	482	94
230	3	280	26	351	49	411	72	484	95
232	4	282	27	354	50	413	73	486	96
234	5	287	28	356	51	416	74	488	97
237	6	289	29	360	52	418	75	491	98
239	7	291	30	371	53	420	76	493	99
241	8	294	31	373	54	422	77	496	100
243	9	296	32	375	55	425	78	499	101
245	10	299	33	377	56	427	79	501	102
248	11	305	34	379	57	430	80	503	103
250	12	308	35	381	58	433	81	505	104
252	13	310	36	383	59	435	82	507	105
254	14	312	37	385	60	444	83	509	106
256	15	319	38	387	61	447	84	511	107
258	16	322	39	390	62	461	85	514	108
261	17	333	40	392	63	464	86	516	109
263	18	335	41	394	64	466	87	519	110
265	19	337	42	396	65	468	88	522	111
267	20	339	43	398	66	471	89	524	112
269	21	341	44	400	67	473	90	526	113
271	22	343	45	402	68	475	91	528	114
274	23	345	46	404	69	477	92		

COMMUNICATIONS MEDIA OCCUPATIONS

DOT JOB CODE		WTG Page	DOT JOB TITLE/ SYNONYMS	OAF	LEVELS			SVP
					GED	R/M/L		
141081	010	232	*Advertising Lay-Out Man advertising designer comprehensive artist visualizer	2-B	4	4 2 3		7
159148	010	400	Announcer	1-C	5	5 2 5		5
159148	018	400	Announcer, International Broadcast	1-C	5	5 2 5		5
159168	010	245	Announcer, Supervisor announcer, chief announcer, head	1-K	5	5 2 5		5

The content of the chart above provides access to information about Communications Media Occupations. The occupations are listed alphabetically by the job title in the DOT. An explanation of the coded information follows:

The term DOT JOB CODE is a 9-digit number that identifies each DOT Job Title, e.g., 141081 010 identifies Advertising Lay-Out Man. No other DOT Job Title has the same set of 9 numbers.

Every DOT Job Title identifies a Worker Trait Group (WTG) described on a specific page (WTG Page) of the DOT, Volume II, 1965 edition. For example, a description of the WTG for Advertising Lay-Out Man can be found on WTG Page 232. (See chart opposite page)

The indented job titles are *synonyms* (other less common job titles) for persons performing the same basic work. Similar job titles may be found locally in different communities. These titles should be added to the list.

Underlined job titles, such as Advertising Lay-Out Man, indicates identification as Primary Occupations and are projected as holding high employment potential.

The asterick (*) before some job titles shows that the title is a Shared Concern Occupation. This means it could also be explored in relation to another cluster, as Marketing and Distribution.

Each Job Title has been coded to one or more of the cluster Occupational Areas — Broadcast (BCO), Graphic (GCO), or Line (LCO) Communications — to indicate where that work is commonly found.

Occupational Area Codes	Occupational Areas Commonly Involved
1	BCO
2	GCO
3	LCO
4	BCO & GCO
5	BCO & LCO
6	GCO & LCO
7	BCO & GCO & LCO

Advertising Lay-Out Man is coded as a "2". This indicates that it is in the Graphic Communications Occupational Area. All of the Job Titles for Announcer are coded "1" indicating they are in the Broadcast Communications Occupational Area.

COMMUNICATIONS MEDIA OCCUPATIONS

DOT JOB CODE		WTG Page	DOT JOB TITLE/ SYNONYMS	OAF	GED	LEVELS R/M/L	SVP
141081	010	232	*Advertising Lay-Out Man advertising designer comprehensive artist visualizer	2-B	4	4 2 3	7
159148	010	400	Announcer	1-C	5	5 2 5	5
159148	018	400	Announcer, International Broadcast	1-C	5	5 2 5	5
159168	010	245	Announcer, Supervisor announcer, chief announcer, head	1-K	5	5 2 5	5

Each Job Title has been coded to indicate the Occupational Area and Family (OAF) to which it is assigned. Example: OAF 2-B (Advertising Lay-Out Man) means Occupational Area 2 (GCO) and Occupational Family B (Illustrators).

Occupational Family Code	**Occupational Family Title**
A	Photographers
B	Illustrators
C	Correspondents
D	Telephone Operators
E	Message Assemblers
F	Image Carrier Preparers
G	Image Transferrers
H	Finishers
J	Telecommunications Operators
K	Supervisors
M	Sales-Service Representatives
N	Telecommunications Installers
P	Graphic Equipment Installers

For example: Two of the three Job Titles for Announcer are coded "C" indicating they are in the Correspondents occupational family, while the other Job Title — Announcer, Supervisor — is coded "K" indicating it is in the Supervisors occupational family.

The coding of the *levels* of GED R/M/L and SVP indicate the following:

GED —General Educational Development
R —Reasoning Development
M —Math Development
L —Language Development

In general, a Job Title that is assigned a *level* means that it is equal to years in school.

LEVEL	**EQUAL TO**
6	15-16 years school
5	13-14
4	9-12
3	7-8
2	4-6
I	1-3

GENERAL EDUCATIONAL DEVELOPMENT
Definitions and Examples of Work

REASONING DEVELOPMENT	LEVEL	MATHEMATICAL DEVELOPMENT	LEVEL	LANGUAGE DEVELOPMENT
Use rules of logic or science in working with a wide range of problems. Understand the most complex ideas. **EXAMPLES:** Conduct psychological experiments. Administer justice in a court. Interpret results of experiments in physics.	6	Use calculus, algebra, and statistics to advance existing knowledge. **EXAMPLES:** Construct mathematical model of an engineering problem. Conduct research into physical phenomena.	6	Read literature, reviews, scientific and technical journals, abstracts, and legal documents. **EXAMPLES:** Advise clients on law. Write editorials.
Use rules of logic or science to describe problems, collect data, draw conclusions. **EXAMPLES:** Treat psychological problems. Study office hazards and eliminate them. Conduct in-service training.	5	Use known applications of calculus, algebra, and statistics to solve scientific and business problems. **EXAMPLES:** Calibrate and test electronic systems. Construct probability tables for insurance company.	5	Same as level 6 but less refined or specialized at this level. **EXAMPLES:** Review contracts for accuracy. Write news reports. Instruct students in public speaking.
Use rules of business and technology to solve practical problems. **EXAMPLES:** Install electrical wiring. Schedule appointments and give information to callers. Give general nursing care.	4	Use principles of algebra, geometry, and mathematics to do precise work. **EXAMPLES:** Lay out sheetmetal work following blueprints.	4	Read technical manuals and specifications. Prepare business letters. Take part in business discussions. **EXAMPLES:** Read engine repair instructions. Answer correspondence. Interview work applicants.
Use common sense to carry out detailed instructions which are spoken, written, or drawn. **EXAMPLES:** File business records. Install and adjust TV sets. Set up and adjust a machine.	3	Use standard arithmetical procedures to solve problems. **EXAMPLES:** Compute and post payroll wage data. Compute cost of auto rental based on per-day and per-mile rates.	3	Read safety rules. Use proper punctuation, spelling, and grammar. Speak with poise, voice control, and confidence. **EXAMPLES:** Read copy to type letters. Prepare written reports. Greet passengers and answer their questions.
Use common sense understanding to carry out detailed but simple written and spoken instructions. **EXAMPLES:** Direct traffic at school crossing. Deliver messages and documents. Assist customer to launder clothes.	2	Add, subtract, multiply, and divide standard units of measure. **EXAMPLES:** Measure carpeting to get maximum number of pieces from roll. Weigh and measure ingredients using scales, measures, and spoons. Calculate delivery charge.	2	Read assembly instructions for a product. Write compound sentences. Use correct pronunciation, word order, and verbs. **EXAMPLES:** Keep records of stock issued. Discuss menu with patrons.
Use common sense to carry out simple instructions. **EXAMPLES:** Mark, sort, and stack articles. Feed an automatic machine. Cut buttons from rags.	1	Add, subtract, divide, and multiply small numbers. Use such measures as cup, pint, inch, yard, ounce, and pound. **EXAMPLES:** Measure and cut cloth to length specified by customer. Count items of stock on hand. Give customer correct change.	1	Compare lists of words and numbers. Print simple sentences. Use normal word order tenses. **EXAMPLES:** Copy a list of names and addresses. Discuss work instructions with foreman.

Additional information providing definitions and examples of work performed at each level of development for Reasoning (R), Mathematical (M), and Language (L) is shown on the opposite page.

The Specific Vocational Preparation (SVP) code indicates the amount of time required to learn the techniques, acquire the information and to gain the experience to perform work at an acceptable level. Performance ability may be acquired in a school, on the job or in other settings.

SVP LEVEL	TIME REQUIRED
1	Short Demonstration
2	Short Demonstration - 1 mo.
3	1-3 months
4	3-6 months
5	6 months - 1 year
6	1-2 years
7	2-4 years
8	4-10 years
9	Over 10 years

COMMUNICATIONS MEDIA OCCUPATIONS

DOT JOB CODE		WTG Page	DOT JOB TITLE/ SYNONYMS	OAF	GED	LEVELS R/M/L	SVP
141081	010	232	*Advertising Lay-Out Man advertising designer comprehensive artist visualizer	2-B	4	4 2 3	7
159148	010	400	Announcer	1-C	5	5 2 5	5
159148	018	400	Announcer, International Broadcast	1-C	5	5 2 5	5
159168	010	245	Announcer, Supervisor announcer, chief announcer, head	1-K	5	5 2 5	5

In summary, the following describes the CMO Job Title Advertising Lay-Out Man:

- Its DOT JOB CODE is 141081 010
- Information about the Worker Trait Group (WTG) is found on page 232 of the DOT, Vol. II, 1965 ed.
- It has at least three synonyms: Advertising designer
  Comprehensive artist
  Visualizer
- It is projected to have high employment potential (underlined).
- It is likely to be explored in relation to another cluster (*).
- It belongs to the Graphic Communications Occupational Area (2).
- It belongs to the Illustrators occupational family (B).
- It has a General Educational Development (GED) LEVEL of 4, indicating that 9-12 years of schooling is generally required as a minimum.
- It has a Reasoning Development LEVEL (R) of 4, indicating that it is necessary to use rules of business and technology to solve practical problems.
- It has a Mathematical Development LEVEL (M) of 2, indicating that it is necessary to add, subtract, multiply, and divide standard units of measure.
- It has a Language Development LEVEL (L) of 3, indicating that it is necessary to use proper punctuation, spelling, and grammar.
- It has a Specific Vocational Preparation LEVEL (SVP) of 7, indicating that 2-4 years of in-school or on-the-job training and experience are commonly necessary to enter this occupation.

COMMUNICATIONS MEDIA OCCUPATIONS

DOT JOB CODE		WTG PAGE	DOT JCB TITLE/SYNONYMS	OAF	GED	LEVELS			SVP
						R	M	L	
234582	010	274	*Addressing-Machine Operator	2-H	4	4	3	3	4
169168	018	245	*Administrative Secretary executive secretary	2-K	4	4	2	4	8
141081	010	232	*Advertising Lay-Out Man advertising designer comprehensive artist visualizer	2-B	4	4	2	3	7
970281	010	312	*Airbrush Artist photograph restorer	2-E	4	4	3	2	6
970884	010	322	*Airbrush Operator spray decorator	2-H	2	2	1	1	3
159148	010	400	Announcer	1-C	5	5	2	5	5
159148	018	400	Announcer, International Broadcast	1-C	5	5	2	5	5
159168	010	245	Announcer, Supervisor announcer, chief announcer, head	1-K	5	5	3	5	7
823884	010	322	Antenna Installer	1-N	3	3	2	2	4
141081	014	232	*Art Lay-Out Man artist	2-B	4	4	2	3	8
794887	010	360	Assembler, Greeting Card hand worker	2-H	2	2	1	1	2
957368	010	265	*Assignment Clerk cable-transfer clerk plant assigner service-order assigner	3-N	3	3	2	3	3
726884	014	322	Audimeter Installer & Serviceman	1-N	2	2	1	2	4
003081	010	371	*Audio Engineer acoustical engineer sound engineer	1-J	6	6	6	5	8
957282	010	516	Audio Operator audio engineer audio technician sound engineer studio engineer, audio-control	1-J	4	4	3	3	7
729281	010	312	*Audio-Video Repairman audio-visual-aids technician	1-N	4	4	1	3	6
822281	010	312	Automatic-Equipment Technician technician, automatic telegraph-equipment maintainer telegraph-printer-maintenance man teletype-maintenance man teletype man teletype repairman teletypewriter repairman	3-N	4	4	3	3	7
970381	010	312	Ben-Day Artist colorman tint layer	2-B	3	3	1	2	8
643885	010	447	Bindery Worker bindery man or girl bindery operator table worker	2-H	3	3	1	1	4
979782	010	435	Blocker I mounter	2-F	3	3	2	2	7
971684	010	282	Blocker II film masker film painter negative checker	2-F	3	3	1	2	4

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS			SVP
						R	M	L	
975782	010	435	Blocker, Metal Base	2-F	3	3	2	1	7
979130	010	299	Blueprinting-and-Photocopy Supervisor	2-K	4	4	3	3	8
979782	014	435	Blueprinting-Machine Operator ammonia-print operator blueline operator diazotype operator whiteprinting-machine operator	2-G	3	3	2	2	5
977884	014	322	Bookbinder binder finisher and bookbinder	2-H	3	3	1	2	6
977884	018	322	Bookbinder Apprentice	2-H	3	3	1	2	3
977781	010	319	Bookbinder, Hand binder and finisher, hand finisher and binder, hand	2-H	3	3	1	1	7
132288	010	528	Book Critic book reviewer manuscript reader reader	2-C	5	5	2	5	8
977887	010	360	Bookmaker, Map map assembler	2-H	2	2	1	1	2
977884	010	322	Book Repairer binder book mender	2-H	2	2	1	1	3
653885	010	447	Book-Sewing-Machine Operator I blankbook-stitching-machine operator book sewer tape-sewing-machine operator	2-H	3	3	1	1	4
977782	010	435	Book-Sewing-Machine Operator II back sewer blankbook-sewing-machine operator	2-H	2	2	1	1	4
640885	010	447	Book Trimmer bindery cutter multiple-knife-edge-trimmer operator shearing-machine operator trimmer operator, three knife	2-H	2	2	1	1	4
207582	010	274	Braille-Duplicating-Machine Operator	2-G	3	3	1	1	4
208588	010	287	Braille-Machine Operator braille operator	2-E	3	3	1	3	5
209688	010	289	Braille Proofreader	2-E	4	4	2	3	4
249688	010	289	Broadcast Checker program clerk radio-program checker	1-E	4	4	2	4	4
003187	010	381	Cable Engineer	3-N	6	6	5	5	8
829131	010	299	Cable Foreman cable-splicing foreman	3-K	4	4	3	3	8
184168	010	245	Cable Foreman, Supervising	3-K	5	5	3	4	8
017281	022	377	Cable Lay-Out Man	3-B	5	5	4	4	7
822884	010	322	Cable Man	3-N	3	3	2	2	5
822381	010	312	Cable Repairman	3-N	3	3	2	2	5
829381	010	312	Cable Splicer cable repairman electrician, cable-splicing splicer	3-N	3	3	2	2	7
829381	014	312	Cable-Splicer Apprentice splicer apprentice	3-N	3	3	2	2	7
829887	010	360	Cable-Splicer Helper	3-N	2	2	1	1	3
239138	010	243	Cable Supervisor traffic controller, cable	3-K	4	4	2	3	7
822381	014	312	Cable Tester cable testman	3-N	3	3	2	2	7

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS R	M	L	SVP
143062	010	230	Cameraman	1-A	4	4	3	2	7
			video-camera engineer						
963887	010	360	Cameraman Assistant	1-E	1	1	1	1	2
			dolly pusher						
976884	010	322	Carbon Printer	2-F	2	2	1	1	5
213382	010	274	*Card-Tape-Converter Operator	2-E	3	3	3	2	4
144061	014	232	Cartoonist	2-B	4	4	1	4	7
977885	010	447	Case-Making-Machine Operator	2-H	2	2	1	2	4
			caser operator						
			cover-making-machine operator						
977884	022	322	Caser	2-H	2	2	1	1	4
			caser-in						
653886	010	356	Casing-in-Line Feeder	2-H	2	2	1	1	2
			caser-in						
653780	010	433	Casing-in-Line Set-Up Man	2-H	3	3	3	2	8
			machine adjuster						
654782	010	435	Casting-Machine Operator	2-E	3	3	1	2	6
			caster operator						
822381	018	312	Central-Office Installer	3-N	4	4	3	3	6
			equipment installer						
235862	010	291	Central-Office Operator	3-D	3	3	3	3	3
			switchboard operator						
			telephone operator						
235138	010	243	Central-Office-Operator Supervisor	3-K	4	4	2	4	6
822281	014	312	Central-Office Repairman	3-N	4	4	3	3	6
			central-office maintainer						
			switchman						
822131	010	299	Central-Office-Repairman Supervisor	3-K	4	4	3	3	7
			installation supervisor						
			maintenance chief						
			operations chief						
			switchman foreman						
			wire chief						
207138	010	243	Chief Clerk, Print Shop	2-K	4	4	3	4	6
209438	010	280	Circulation Clerk	2-M	3	3	2	3	5
			subscription clerk						
979782	018	435	Clamper	2-F	3	3	2	2	6
209388	018	276	Classified-Ad Clerk	2-E	3	3	2	3	5
			clerk, classified						
219388	062	280	Clerk, Cable Transfer	3-M	3	3	3	3	4
239588	014	289	Clerk, Directory	3-E	2	2	2	1	3
249887	010	360	*Clerk, Draftsman	6-E	2	2	2	2	2
239688	010	289	Clerk, Inspection	3-E	3	3	2	2	4
235588	010	289	Clerk, Route	3-E	3	3	2	3	4
219388	070	276	Clerk, Telegraph Service	3-E	3	3	3	3	6
			clerk, personal service bureau						
			clerk, private wire billing and control						
219388	074	276	*Coding Clerk	2-E	3	3	2	2	3
653885	014	447	Collating-Machine Operator	2-H	2	2	1	1	4
			set-making-machine operator						
653687	010	282	Collator	2-H	2	2	1	1	2
240887	010	360	Collector	3-M	2	2	2	1	2
			coin-box collector						
			pay-station collector						
970884	014	322	Colorer	2-H	3	3	2	2	3
			colorman						
132068	010	522	Columnist	2-C	5	5	3	5	7
822281	018	312	Combination Man	3-N	4	4	3	3	5
			section maintainer						
003187	014	381	Commercial Engineer	1-J	5	5	5	5	7
			traffic engineer						
822261	022	312	Communication Engineer	5-J	4	4	3	3	7

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS R	LEVELS M	LEVELS L	SVP
822281	026	312	Communication Man communication equipment man electrician, telephone maintenance mechanic, telephone switchboard man	3-N	4	4	3	3	7
627281	010	312	Composing-Room Machinist printing-equipment mechanic	2-P	4	4	3	3	6
973381	010	312	Compositor I typesetter typographer	2-F	3	3	2	2	8
973381	014	312	Compositor Apprentice typesetter apprentice typographer apprentice	2-F	3	3	2	2	8
213382	014	274	*Computer-Peripheral-Equipment Operator	2-E	3	3	2	3	4
976884	018	322	*Contact-Frame Operator darkroom man process man	2-F	3	3	2	3	6
131088	010	524	*Continuity Writer	1-C	5	5	2	5	7
249368	018	258	*Contract Clerk adjustment clerk application clerk order clerk outside contact clerk service representative	3-E	3	3	2	3	5
239138	014	243	Contract Clerk Supervisor service-representative supervisor	3-K	4	4	3	3	6
239228	010	241	Contract-Clerk Training Supervisor	3-K	4	4	2	4	6
957382	010	516	Control-Room Man control operator master-control operator master-control supervisor switch-bank-desk operator	1-J	4	4	2	3	7
957282	014	516	Control-Room Technician	1-J	4	4	3	3	7
957138	010	305	Control-Room Technician Supervisor	1-K	4	4	3	3	7
193168	030	261	Control Supervisor, Junior	1-K	4	4	3	3	7
193168	034	261	Control Supervisor, Senior master-control supervisor	1-K	5	5	4	3	8
979381	010	312	Copy Cameraman copy-camera operator film operator negative-process operator print-shop photographer	2-E	4	4	3	2	6
249168	010	261	Copy Cutter copy man	2-E	4	4	3	2	8
209588	026	289	Copy Holder	2-E	3	3	1	3	4
152288	010	528	Copyist	2-C	4	4	3	2	7
971885	010	447	Copyman I roller printer	2-F	3	3	2	2	3
207782	010	435	Copy Operator sidetable man	2-G	3	3	1	1	4
132288	014	528	Copy Reader deskman headline writer rewrite man	2-C	5	5	3	5	7
132288	018	528	Copy Reader, Book proofreader	2-C	3	3	2	3	6
963288	010	528	Copyright Expert copyright clerk	1-C	4	4	3	4	7
132088	010	524	*Copy Writer advertising-copy writer ad writer	2-C	5	5	3	5	7
973381	018	312	Correction Man floorman	2-F	3	3	2	2	8

		WTG				LEVELS			
DOT JOB CODE		PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	R	M	L	SVP
132268	010	526	Correspondent newspaper correspondent	4-C	5	5	3	5	7
969261	010	308	*Costumer wardrobe designer wardrobe mistress	1-E	3	3	2	3	7
659687	010	282	Counter	2-H	1	1	1	1	2
239368	010	258	Counter Clerk	3-E	4	4	2	2	5
249368	022	258	Counter Clerk ad clerk	2-E	4	4	2	3	5
141081	034	232	*Cover Designer	2-B	5	5	1	2	7
977884	026	322	*Coverer, Looseleaf Binder	2-H	2	2	1	1	4
653782	010	435	Covering-Machine Operator	2-H	2	2	1	1	5
132088	014	524	Critic book critic reviewer	2-C	6	6	3	5	8
208588	014	287	*Cryptographic-Machine Operator code clerk cryptographic technician	2-E	4	4	2	3	5
206388	014	276	Cut Man cut-die clerk	2-E	3	3	1	2	4
649782	014	435	Cutting-Machine Operator	2-H	3	3	1	1	4
500781	010	319	Cylinder Grinder grinder and plater	2-F	3	3	3	1	7
651886	010	356	Cylinder-Press Feeder cylinder-press-man helper flat-bed-press feeder	2-G	2	2	1	1	2
651782	010	435	Cylinder-Press Man cylinder-press operator flatbed-press man	2-G	3	3	2	2	7
651782	014	435	Cylinder-Press Man Apprentice	2-G	3	3	2	2	7
213588	010	287	*Data Typist	2-E	3	3	2	2	4
970281	014	312	*Delineator renderer	2-B	4	4	2	3	7
017281	034	377	Detailer	7-B	4	4	4	4	7
976381	010	312	*Developer darkroom man doper hand developer photograph printer	2-E	3	3	3	2	7
213382	018	274	*Digital-Computer Operator computer operator console operator	2-E	3	3	2	3	6
739381	030	312	*Diorama Model-Maker carpenter, display	2-B	4	4	3	3	7
159168	018	245	Director	1-K	5	5	3	5	8
164118	010	237	Director, Advertising	2-K	5	5	4	4	8
141031	014	228	Director, Art	2-K	5	5	3	4	8
184168	030	245	Director, Broadcast I	1-K	6	6	3	6	8
184118	010	237	Director, International Broadcasting manager, international division	1-K	5	5	4	5	8
184168	034	245	Director, International Programs	1-K	6	6	3	6	8
152048	018	394	*Director, Music conductor, music manager, music musical director	1-K	6	6	4	5	8
152048	022	394	Director, Music, International Broadcast	1-K	6	6	4	5	8
184168	014	245	Director, Operations	1-K	5	5	3	5	8
184168	018	245	Director, Operations, Broadcast	1-K	5	5	4	5	8
159168	022	245	Director, Program director, broadcast radio director	1-K	5	5	3	5	6

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	LEVELS GED	R	M	L	SVP
184168	022	245	Director, Program manager, program	1-K	5	5	3	4	8
184118	014	237	Director, Public Service manager, public service	1-K	6	6	4	6	8
184168	026	245	Director, Sports	1-K	5	5	2	5	8
963168	010	375	Director, Technical switching operator	1-K	5	5	3	4	8
159148	022	400	Disk Jockey	1-C	3	3	2	3	5
957168	010	261	Dispatcher cable dispatcher	3-N	4	4	2	3	7
739381	034	312	*Display Assembler experimental display builder model maker short-order man	2-B	4	4	3	3	7

KEY TO TITLE LINES

DOT-Dictionary of Occupational Titles.
DOT JOB CODE-9 digit number identifying DOT Job Title.
WTG-Worker Trait Group-described on specific page of DOT, Vol. II, 1965 ed.
DOT JOB TITLE/SYNONYMS-Less common job titles for persons performing same basic work.
Underlined Job Titles-Primary occupations holding high employment potential.
Asterisk-Shared Concern Occupation-related to another cluster.
OAF-Occupational Area Family-coded to occupational area and family.

Occupational Area Codes	Occupational Areas Commonly Involved	Occupational Family Code	Occupational Family Title
1	BCO	A	Photographers
2	GCO	B	Illustrators
3	LCO	C	Correspondents
4	BCO & GCO	D	Telephone Operators
5	BCO & LCO	E	Message Assemblers
6	GCO & LCO	F	Image Carrier Preparers
7	BCO & GCO & LCO	G	Image Transferrers
		H	Finishers
		J	Telecommunications Operators
		K	Supervisors
		M	Sales-Service Representatives
		N	Telecommunications Installers
		P	Graphic Equipment Installers

LEVELS - Equal to years in school.
GED - General Educational Development
R - Reasoning Development
M - Math Development
L - Language Development

LEVEL	EQUAL TO
6	15-16 years school
5	13-14
4	9-12
3	7-8
2	4-6
1	1-3

SVP - Specific Vocational Preparation - time required to learn techniques.

SVP LEVEL	TIME REQUIRED
1	Short Demonstration
2	Short Demonstration - 1 mo.
3	1-3 months
4	3-6 months
5	6 months - 1 year
6	1-2 years
7	2-4 years
8	4-10 years
9	Over 10 years

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS			SVP
						R	M	L	
209688	022	289	Display-Desk Clerk advertising-order clerk	2-E	3	3	1	3	4
249281	010	377	*Drafting Clerk chart man charting draftsman	2-E	4	4	3	3	7
017281	038	377	*Draftsman Apprentice	7-B	5	5	5	4	7
017281	042	377	*Draftsman, Black & White delineator	7-B	4	4	4	4	7
017281	046	377	*Draftsman, Commercial	7-B	5	5	5	4	7
017281	050	377	*Draftsman, Detail detail man mill detailer	7-B	4	4	4	4	7
003281	014	377	*Draftsman, Electronic	1-B	5	5	4	5	7
207884	010	322	*Duplicating-Machine Operator I	2-G	2	2	1	1	2
207782	014	435	*Duplicating-Machine Operator II	2-G	3	3	1	1	4
207782	018	435	*Duplicating-Machine Operator III	2-G	3	3	1	1	4
207885	010	447	*Duplicating-Machine Operator IV	2-G	2	2	1	1	2
132288	022	528	Editing Clerk	2-C	3	3	1	3	6
132068	014	522	Editor, Book	2-C	5	5	4	5	8
132068	018	522	Editor, Cable Syndicate bureau chief	2-C	5	5	3	5	7
132038	010	522	Editor, City city editor	2-C	5	5	3	5	8
131038	010	522	Editor, Continuity & Script manager, continuity and script script supervisor	1-C	5	5	3	5	8
132038	014	522	Editor, Department editor, feature	2-C	5	5	3	5	8
132038	018	522	Editor, Editorial Page	2-C	5	5	3	5	8
132038	022	522	Editor, Financial business & finance editor	2-C	5	5	5	5	8
131038	014	522	Editor, Foreign News, Broadcast	1-C	5	5	3	5	8
139088	018	524	Editor, Greeting Card	2-C	5	5	2	4	6
132288	038	528	Editorial Assistant	2-C	5	5	2	5	6
132088	018	524	Editorial Writer	2-C	6	6	3	6	8
132388	010	276	Editor, Index indexer	2-C	4	4	2	4	5
132068	022	522	Editor, Magazine	2-C	6	6	3	6	8
132018	010	522	Editor, Managing Newspaper managing editor	2-C	6	6	3	5	8
131038	018	522	Editor, News manager, news and special events	1-C	5	5	3	5	7
132068	026	522	Editor, News editor, make-up	2-C	5	5	3	5	8
132018	014	522	Editor, Newspaper editor-in-chief, newspaper	2-C	6	6	3	6	9
132288	026	526	Editor, News Photograph	2-C	4	4	2	2	7
132288	030	528	Editor, Picture editor, photography editor, picture page	2-C	4	4	1	2	7
132038	026	522	Editor, Sports sports editor	2-C	5	5	3	5	7
132038	030	522	Editor, State state editor	2-C	5	5	3	5	7
132268	034	526	Editor, Telegraph editor, wire	2-C	4	4	2	3	7
132038	034	522	Editor, Trade-or-Technical Publication	2-C	6	6	4	6	8
822281	030	312	Electrician, Office electrician, station, assistant	3-N	4	4	3	3	7

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS			SVP
						R	M	L	
823281	014	312	Electrician, Radio	1-N	4	4	3	3	7
			radio-communications mechanician						
			radio-maintenance repairman						
			radio mechanic						
			station-maintenance man						
			station mechanic						
			transmitter repairman						
729884	030	322	Electric-Sign Assembler	2-F	3	3	1	1	3
003081	034	371	*Electronic Engineer	5-J	6	6	6	5	8
828251	010	486	*Electronic-Sales-and-Service Technician	1-M	5	5	4	4	7
828281	022	312	*Electronics Mechanic	5-N	5	5	5	4	7
			communication technician						
			electronics-equipment mechanic						
			electronics-maintenance man						
			electronics specialist						
			electronics-system mechanic						
			electronics technician						
828281	026	312	*Electronics-Mechanic Apprentice	5-N	5	5	5	4	7
			electronics-technician apprentice						
003181	014	379	*Electronic Technician	5-J	5	5	5	5	7
974381	010	312	Electrotyper	2-F	3	3	2	2	8
974381	014	312	Electrotyper Apprentice	2-F	3	3	2	2	8
659782	018	435	Embosser	2-G	3	3	2	2	6
659782	022	435	Embossing-Press Operator	2-G	3	3	2	1	7
			embosser						
659782	026	435	Embossing-Press-Operator Apprentice	2-G	3	3	2	1	7
			embossing-pressman apprentice						
979884	010	322	Engraver	2-F	2	2	1	1	3
979281	014	312	Engraver, Block	2-F	4	4	1	2	7
			artist, woodblock						
			block editor						
			engraver, wood						
			wood-cut engraver						
651782	018	435	Engraving-Press Operator	2-G	3	3	2	2	7
			die-stamping-press operator						
970381	018	312	Engrosser	2-B	3	3	2	2	8
			calligrapher						
			penman						
			script artist						
234885	010	447	*Envelope-Sealing-Machine Operator	2-H	3	3	2	1	3
			envelope-sealer operator						
			letter-sealer operator						
003081	042	371	*Equipment Engineer	3-N	6	6	5	5	8
822281	034	312	Equipment Inspector	3-N	4	4	3	3	8
822381	022	312	Equipment Installer	3-N	4	4	3	3	7
219388	118	276	Estimator	2-M	4	4	3	3	6
			book-publication manufacturing man						
971381	010	312	Etcher Apprentice, Photoengraving	2-F	4	4	3	3	8
			etcher apprentice						
971281	010	312	Etcher, Hand	2-F	4	4	3	3	6
971887	010	380	Etcher Helper, Hand	2-F	3	3	1	1	2
971381	014	312	Etcher, Photoengraving	2-F	4	4	3	3	8
979687	010	282	Examiner	2-H	2	2	1	2	4
959387	010	271	Facilityman	3-N	3	3	2	2	6
132268	014	526	Feature Reporter	2-C	5	5	3	5	7
			feature writer						
			staff writer						
193262	018	516	Field Engineer	1-J	4	4	4	4	7
			field technician						

		WTG				LEVELS			
DOT JOB CODE		PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	R	M	L	SVP
829281	034	312	Field Engineer	1-J	5	5	5	5	7
			field-service representative						
			field-technical representative						
			technical representative						
193168	038	245	Field Supervisor, Broadcast	1-K	4	4	4	3	7
979137	010	299	Finishing-Room Foreman	2-K	4	4	3	3	7
651782	022	435	Flexographic-Press Man I	2-G	3	3	2	1	4
651782	026	435	Flexographic-Press Man II	2-G	3	3	1	2	7
653886	014	356	Folding-Machine Feeder	2-H	1	1	0	1	2
234885	014	447	*Folding-Machine Operator	2-H	2	2	1	1	2
			folder operator						
653782	014	435	Folding-Machine Operator	2-H	2	2	1	1	5
			folder, machine						
653780	014	433	Folding-Machine Set-Up Man	2-H	3	3	3	2	8
			folding-machine adjuster						
137288	018	528	Foreign-News Translator	1-C	5	5	2	5	7
653131	010	299	Foreman, Bindery	2-K	4	4	2	3	8
			bindery chief						
			bookbinder, chief						
			bookbinder foreman						
			hand-bookbinder foreman						
973138	010	305	Foreman, Composing-Room	2-K	4	4	3	3	7
			composing-room foreman						
829131	018	299	Foreman, Electrical-Repair & Telephone-Line Maintenance	3-K	4	4	3	3	8
239138	018	243	*Foreman, Mailroom	2-K	4	4	2	3	7
			mail-room supervisor						
651130	010	299	Foreman, Press Room	2-K	4	4	3	3	8
			press-room foreman						
659130	010	299	Foreman, Printing Shop	2-K	4	4	3	3	8
			printing foreman						
			shop foreman						
970281	016	312	Form Designer	2-B	3	3	2	3	6
			form drafter						
822884	014	322	Frameman	3-N	3	3	2	2	4
235862	014	291	Gamewell Operator	3-D	3	3	2	3	3
653886	018	356	Gathering-Machine Feeder	2-H	2	2	1	1	2
653780	018	433	Gathering-Machine Set-Up Man	2-H	3	3	2	2	8
			gathering-machine adjuster						
772381	010	312	Glass Bender	2-E	3	3	2	2	6
			glass blower						
			glass-tube bender						
979884	018	322	Gold-Leaf Stamper	2-G	3	3	1	1	3
			gold-leaf printer						
			gold marker						
			gold stamper						
			hot stamper						
			lettering-machine operator						
			stamping-press operator						
653782	018	435	Head-Bander-and-Liner Operator	2-H	3	3	1	1	4
213382	022	274	*High-Speed-Printer Operator	2-E	3	3	2	2	4
			off-line printer operator						
141081	042	232	*Illustrator	2-B	4	4	3	2	7
			commercial artist, illustrating						
			graphic artist						
973381	022	312	Imposer	2-F	3	3	2	2	8
			lock-up man						
			stone hand						
			stoneman						

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS R	M	L	SVP
979684	022	322	Impression Man	2-G	3	3	1	1	3
235862	018	291	Information Operator information and dsa operator information girl information-telephone operator	3-D	3	3	2	3	3
659687	014	282	Inkman	2-E	2	2	2	2	4
977884	030	322	Inlayer	2-H	2	2	1	1	4
234885	018	447	Inserting-Machine Operator	2-H	2	2	1	1	3
822281	038	312	Installer Repairman installer-and-maintenance man	3-N	3	3	2	3	6
722281	018	312	Instrument Shopman shop repairman	3-N	4	4	3	3	7
722131	010	299	Instrument-Shop Supervisor instrument-shop foreman	3-K	4	4	4	3	7
221588	018	289	Jacket Preparer	2-E	2	2	1	2	3
973381	026	312	Job Printer country printer printer	2-G	4	4	2	3	8
973381	030	312	Job Printer Apprentice country-printer apprentice printer's devil	2-G	4	4	2	3	8
659687	010	360	Jogger sheet layer	2-H	1	1	1	1	2
209382	010	274	*Justowriter Operator	2-E	3	3	2	3	5
652885	050	447	Keying-Machine Operator	2-G	2	2	1	2	2
213582	010	274	*Key-Punch Operator card-punch-machine operator punch-machine operator summary-punch-machine operator	2-E	3	3	2	2	4
141081	046	232	Lay-Out Man supervisor, publications production	2-B	4	4	2	3	8
772381	014	312	Lay-Out Man I patternmaker	2-E	3	3	3	2	6
970381	026	312	Lay-Out Man II	2-E	3	3	2	3	7
970381	030	312	*Letterer commercial artist, lettering	2-B	3	3	2	2	6
132088	022	524	Lexicographer	2-C	6	6	3	6	8
206388	030	276	Librarian librarian, clerical morgue keeper	2-E	3	3	1	2	4
962381	010	312	Light Technician light-direction engineer lighting technician	1-J	4	4	3	3	7
003081	056	371	Line-Construction Engineer district engineer	3-N	6	6	5	5	8
[illegible]2131	014	299	Line Foreman	3-K	4	4	3	3	7
822267	010	420	Line Inspector inspector, line	3-N	4	4	3	3	7
821281	010	312	Lineman	3-N	4	4	3	3	7
822381	026	312	Lineman	3-N	3	3	2	2	7
822381	030	312	Lineman, Section	3-N	3	3	2	2	6
979381	022	312	Line-Up Man	2-F	3	3	2	2	8
650582	010	274	Linofilm-Machine Operator	2-E	2	2	1	2	3
650582	014	274	Linotype Operator composing-machine operator	2-E	3	3	1	2	5
971281	014	312	Lithographer	2-F	4	4	3	3	8
651886	014	356	Lithographic-Press-Feeder Apprentice lithographic-press-assistant apprentice press-feeder apprentice	2-G	2	2	1	1	2

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	LEVELS				SVP
					GED	R	M	L	
651782	030	435	Lithographic Proofer	2-G	3	3	2	2	7
651782	034	435	Lithographic-Proofer Apprentice proofer apprentice	2-G	3	3	2	2	7
654782	014	435	Ludlow-Machine Operator	2-E	2	2	1	2	6
627281	014	312	Machinist Apprentice, Composing Room printing-equipment-mechanic apprentice	2-P	3	3	2	3	8
627281	018	312	Machinist Apprentice, Linotype linotype-maintenance-mechanic apprentice	2-P	4	4	3	3	7
627281	022	312	Machinist, Linotype	2-P	4	4	3	3	7
239587	010	282	*Mailer	2-H	3	3	2	2	3
239587	014	282	*Mailer Apprentice	2-H	3	3	2	2	3
822281	042	312	Maintenance Inspector	3-N	4	4	3	3	8
973381	034	312	Make-Up Man lock-up man stone hand stoneman	2-F	3	3	2	2	6
163168	014	245	Manager, Advertising	2-K	4	4	3	4	8
163118	010	237	Manager, Circulation	2-K	5	5	5	5	8
169168	054	245	Manager, Copyright	1-K	4	4	3	4	7
239138	022	243	Manager, Delivery Department	3-K	4	4	2	3	6
131038	026	522	Manager, News, Special Events and Public Affairs	1-C	5	5	3	5	7
194168	010	375	Manager, Sound Effects sound effects supervisor sound man, chief sound man, head	1-K	4	4	2	4	7
184118	050	237	Manager, Station	1-K	5	5	3	5	8
132018	018	522	Manager, Technical-and-Scientific Publications	2-C	6	6	5	6	9
184168	082	245	Manager, Telegraph Office	3-K	4	4	3	4	7
184168	110	245	Manager, Traffic	1-K	5	5	4	5	7
184168	102	245	Manager, Traffic I	3-K	5	5	4	4	7
184168	106	245	Manager, Traffic II traffic chief traffic superintendent	3-K	5	5	4	5	8
979884	026	322	Map-and-Chart Mounter gluer paster	2-H	3	3	1	1	5
957282	018	516	Master-Control Engineer	1-J	4	4	3	3	7
822281	046	312	Mechanician, Submarine Cable Equipment radioman tester	3-N	4	4	3	3	6
502885	014	447	Metal Man furnaceman handyman remelter	2-E	2	2	1	1	2
963782	010	435	Microphone Operator	1-J	3	3	3	2	7
207782	022	435	*Mimeograph Operator	2-G	3	3	1	1	4
650582	018	274	Monotype-Keyboard Operator composing-machine operator monotype operator	2-E	3	3	1	2	5
236588	010	287	Morse Operator station telegrapher telegrapher telegrapher cashier	3-J	3	3	2	3	5
239138	030	243	Morse Supervisor	3-K	4	4	2	3	7
152168	010	245	Musical Program Director music administrator	1-K	4	4	2	4	6
152588	010	287	*Music Copyist	2-E	4	4	3	2	5
979381	026	312	Music Engraver engraver	2-F	3	3	2	3	6

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	LEVELS				
					GED	R	M	L	SVP
970381	034	312	Music Grapher music autographer	2-E	3	3	2	2	6
100388	022	276	Music Librarian librarian	1-E	4	4	2	4	6
100388	026	276	Music Librarian, International Broadcast	1-E	5	5	2	5	6
824281	022	312	Neon-Sign Serviceman signman	2-P	3	3	2	2	6
641782	014	435	New-Era-Unit Operator gluing-machine operator, automatic	2-H	3	3	1	1	4
131068	010	522	News Analyst, Broadcast commentator news commentator	1-C	5	5	3	5	8
249887	018	360	Newspaper Inserter inserter sticker stuffer	2-H	1	1	1	1	2
132068	030	522	News Specialist, Syndicate syndicate writer	2-C	5	5	3	5	8

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OAF-Occupational Area Family-coded to occupational area and family.

Occupational Area Codes	Occupational Areas Commonly Involved	Occupational Family Code	Occupational Family Title
1	BCO	A	Photographers
2	GCO	B	Illustrators
3	LCO	C	Correspondents
4	BCO & GCO	D	Telephone Operators
5	BCO & LCO	E	Message Assemblers
6	GCO & LCO	F	Image Carrier Preparers
7	BCO & GCO & LCO	G	Image Transferrers
		H	Finishers
		J	Telecommunications Operators
		K	Supervisors
		M	Sales-Service Representatives
		N	Telecommunications Installers
		P	Graphic Equipment Installers

LEVELS - Equal to years in school.
GED - General Educational Development
R - Reasoning Development
M - Math Development
L - Language Development

LEVEL	EQUAL TO
6	15-16 years school
5	13-14
4	9-12
3	7-8
2	4-6
1	1-3

SVP - Specific Vocational Preparation - time required to learn techniques.

SVP LEVEL	TIME REQUIRED
1	Short Demonstration
2	Short Demonstration - 1 mo.
3	1-3 months
4	3-6 months
5	6 months - 1 year
6	1-2 years
7	2-4 years
8	4-10 years
9	Over 10 years

DOT JOB	CODE	WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED LEVELS R	M	L	SVP
207782	026	435	*Offset-Duplicating-Machine Operator	2-G	3	3	1	2	5
651782	038	435	Offset-Duplicating-Machine Operator	2-G	2	2	2	1	4
651782	042	435	Offset-Press Man lithographic-press man offset-press operator	2-G	3	3	2	2	7
651782	046	435	Offset-Press-Man Apprentice lithographic-press-man apprentice	2-G	3	3	2	2	7
651885	014	447	Offset-Press Operator	2-G	3	3	1	1	2
651782	050	435	Offset-Proof-Press Operator	2-G	2	2	1	1	6
184118	058	237	Operations Manager	3-K	6	6	5	5	6
651381	010	312	Overlay Cutter	2-F	2	2	1	1	7
970884	018	322	*Painter, Airbrush	2-H	3	3	2	1	5
970381	046	312	Painter, Sign	2-G	4	4	2	2	7
659885	010	447	Paper Conditioner paper-conditioner-machine operator	2-E	2	2	1	1	5
979381	030	312	Paste-Up Man	2-E	4	4	3	3	8
979381	034	312	Paste-Up Man Apprentice paste-make-up-artist apprentice	2-E	4	4	3	3	8
653886	022	356	Perfect-Binder Feeder	2-H	1	1	0	1	2
653780	022	433	Perfect-Binder Set-Up Man perfect-binder operator	2-H	3	3	3	2	8
659885	014	447	Perforating-Machine Operator perforator operator	2-H	2	2	1	1	4
203588	010	287	*Perforator Typist hooven-perforating-machine operator	2-E	3	3	1	2	4
650782	010	435	Photocomposing-Machine Operator typesetter	2-E	3	3	1	2	6
208588	018	287	*Photocomposing-Machine Perforator Operator	2-E	3	3	1	3	5
971381	018	312	Photoengraver engraving operator photolith operator	2-F	4	4	3	3	8
971381	022	312	Photoengraver Apprentice	2-F	4	4	3	3	8
971381	026	312	Photoengraving Finisher finisher plate finisher, photoengraving	2-F	4	4	2	3	8
971381	030	312	Photoengraving Printer proof-plate maker stripper and printer	2-G	4	4	3	3	6
971381	034	312	Photoengraving Proofer proofer	2-F	4	4	2	3	8
971381	038	312	Photoengraving-Proofer Apprentice proofer apprentice	2-F	4	4	2	3	7
143062	026	230	*Photographer Apprentice, Commercial still-cameraman apprentice	2-A	3	3	2	2	7
143062	034	230	*Photographer, Commercial still cameraman	2-A	4	4	3	2	7
972382	010	514	Photographer, Lithographic cameraman copy cameraman lithographic-cameraman photographer, stone photographer, wet plate photolithographer photolithographic process man process man	2-E	4	4	3	2	7
143062	038	230	Photographer, News cameraman photographer, newspaper	4-A	3	3	2	2	7
971382	010	514	Photographer, Photoengraving cameraman engraving photographer	2-E	4	4	3	2	7

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS			
						R	M	L	SVP
976131	018	299	Photographic Foreman photographic section chief	2-K	4	4	3	3	7
207885	014	447	*Photographic-Machine Operator microphotographer	2-G	2	2	1	1	3
652885	070	447	Photolettering-Machine Operator typesetter	2-E	2	2	1	1	4
972382	014	514	Photolithographer Apprentice copy-cameraman apprentice lithographer apprentice photographer apprentice, lithographic	2-E	4	4	3	2	7
979887	010	360	Photolith Operator	2-G	3	3	2	2	3
193382	010	516	*Photoradio Operator facsimile operator radio-photo technician	5-J	4	4	4	3	6
979887	014	360	Photostatic-Print Cutter	2-H	2	2	1	2	2
979382	010	514	Photostat Operator photocopy operator photostat-machine operator	2-E	3	3	3	2	5
650582	022	274	Phototypesetter Operator photosetter	2-E	3	3	1	2	5
822884	018	322	Plant Wireman	3-N	3	3	2	3	5
659380	010	430	Plate Finisher	2-F	3	3	2	2	8
972782	010	435	Plate Grainer grainer plate preparer zinc-plate grainer	2-F	3	3	2	1	7
972782	014	435	Plate Grainer Apprentice stone-and-plate-preparer apprentice plate-preparer apprentice grainer apprentice	2-F	3	3	2	1	7
651885	018	447	Platen-Press Feeder	2-G	2	2	2	1	4
651782	054	435	Platen-Press Man make-ready man platen-press operator	2-G	3	3	1	2	7
651782	058	435	Platen-Press Man Apprentice make-ready-man apprentice	2-G	3	3	1	2	7
972887	010	360	Plate Setter	2-F	2	2	2	1	2
977884	034	322	Presser caser-in	2-H	2	2	1	1	4
627281	026	312	Press-Maintenance Man	2-P	3	3	2	2	8
651782	066	435	Printing-Press Operator	2-G	3	3	1	1	5
979081	010	232	Printmaker etcher, hand	2-G	5	5	1	2	8
979886	010	356	Print-Shop Helper	2-G	3	3	1	1	2
822381	034	312	Private-Branch-Exchange Installer p.b.x. installer	3-N	4	4	3	3	6
822381	038	312	Private-Branch-Exchange Installer Apprentice p.b.x. installer apprentice	3-N	4	4	3	3	6
822281	050	312	Private-Branch-Exchange Repairman p.b.x. repairman telephone repairman	3-N	4	4	3	3	7
235228	010	335	Private-Branch-Exchange Service Advisor	3-K	4	4	2	4	6
972281	010	312	Process Artist lithographic-color-artist retoucher submarine artist tone artist	2-E	4	4	3	2	8
972281	014	312	Process-Artist Apprentice lithographic-color-artist-retoucher apprentice tone-artist apprentice	2-E	4	4	3	2	8
159118	010	237	Producer	1-K	5	5	3	5	8
184168	126	245	Production Chief	1-K	5	5	3	5	7

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS R	LEVELS M	LEVELS L	SVP
184168	130	245	Production Chief, International Broadcast	1-K	5	5	3	5	8
			executive producer						
			producer						
			producer-director						
963168	014	261	Production Man	1-K	4	4	3	4	6
141168	010	245	*Production Manager, Advertising	2-K	4	4	2	3	6
652138	014	305	Production Manager, Reproduction	2-K	4	4	3	3	7
159168	026	245	Production Man, International Broadcast	1-K	5	5	3	5	6
			producer						
			production man, bilingual						
979138	010	243	Production Supervisor	2-K	5	5	2	4	8
			supervisor, layout						
963168	018	261	Program Assistant	1-K	4	4	3	4	5
			associate director						
			production assistant						
957388	010	276	Program-Transmission Supervisor	1-K	3	3	2	3	6
			traffic clerk						
			traffic man						
			traffic supervisor						
979782	030	435	Proofing-Machine Operator	2-G	3	3	1	1	4
			proofer						
651782	070	435	Proof-Press Man	2-G	2	2	1	1	5
			galley boy						
			imprinting-machine operator						
			proof boy						
			proofer						
209688	034	289	*Proofreader	2-E	3	3	1	3	4
962887	014	360	*Property Handler	1-E	2	2	1	1	2
			floorman, stage						
			grip						
165068	014	482	Public Program Supervisor	3-C	5	5	4	5	7
165068	018	482	*Public-Relations Man I	4-C	5	5	3	5	7
			director, publicity						
			director, public relations						
			manager, promotion						
			manager, publicity						
			press agent						
			promotion man						
			public-information writer						
			publicity agent						
			publicity man						
			publicity supervisor						
			publicity writer						
			public-relations counsel						
165068	022	482	*Public-Relations Man II	4-C	5	5	3	5	7
			director, publicity						
			director, public relations						
			manager, promotion						
			manager, publicity						
			press agent						
			promotion man						
			public events man						
			publicity agent						
			publicity man						
			publicity supervisor						
			publicity writer						
			public-relations counsel						
824884	018	322	Pumpman	2-F	3	3	2	2	5
			neon-tube pumper						
			pumper						

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	LEVELS GED	R	M	L	SVP
659687	018	282	*Racker, Silk-Screen Printing	2-H	2	2	1	1	2
823281	026	312	*Radio Communications Equipment Installer-Serviceman	5-N	4	4	3	3	7
003081	070	371	Radio Engineer	1-J	6	6	6	5	8
003187	050	381	Radio Engineer	1-J	5	5	4	4	7
			engineer, chief						
			engineer-in-charge						
			radio operator, chief						
			station engineer						
			technician, senior						
823281	030	312	*Radio Mechanic	1-N	4	4	3	3	7
823884	014	322	*Radio-Mechanic Helper	1-N	3	3	1	1	3
			radio helper						
235388	010	276	*Radio-Message Router	3-E	4	4	2	3	5
720281	010	312	*Radio Repairman	1-N	4	4	3	3	6
			trouble shooter, radio						
193282	034	516	Radiotelegraph Operator	5-J	4	4	4	4	7
			c.w. operator						
			radiotelegraphist						
			telegraph man						
193282	038	516	Radiotelephone Operator	5-J	4	4	4	4	6
			phone-circuit operator						
			radioman						
			radiophone operator						
			radiotelephone-technical operator						
652886	026	356	Raised Printer	2-G	1	1	0	1	1
			thermograph operator						
132288	042	528	Reader, First	2-C	5	5	2	5	6
			first reader						
194782	014	435	*Recording-Machine Operator	1-J	4	4	2	3	7
			recording technician						
168168	074	245	Regulatory Administrator	3-K	5	5	5	5	8
			regulatory coordinator						
822131	018	299	Repairman Foreman	3-K	4	4	3	3	7
			customer facilities foreman						
			maintenance supervisor						
			manager, service						
			service-center supervisor						
970381	054	312	Repeat Chief	2-F	4	4	2	2	7
			inspector						
132268	018	526	Reporter	2-C	5	5	3	5	8
			leg man						
			news reporter						
257258	010	488	Representative, Personal Service	3-M	4	4	3	4	6
976381	022	312	Reproduction Technician	2-E	4	4	2	2	6
			tracing-cloth-reproduction technician						
			vacuum-frame operator						
970381	058	312	Retoucher, Photoengraving	2-F	4	4	2	2	7
184118	062	237	Revenue-Settlements Administrator	3-K	5	5	5	5	8
132268	022	526	Rewrite Man	2-C	4	4	2	4	7
			rewriter						
823281	038	312	Rigger	1-N	4	4	3	2	7
			lineman						
823138	010	305	Rigger Foreman	1-K	4	4	3	3	7
			rigger, radio, chief						
651782	074	435	Rotogravure-Press Man	2-G	3	3	2	2	7
653885	018	447	Rounding-and-Backing-Machine Operator	2-H	2	2	1	1	4
			rounder						
			rounder and backer						
979782	038	435	Router	2-F	3	3	1	1	5
			printing-plate router						

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS R	LEVELS M	LEVELS L	SVP
692885	194	447	Saddle-and-Side Wire Stitcher stitcher operator	2-H	1	1	1	1	2
653782	022	435	Saddle-Stitching-Machine Operator	2-H	3	3	1	3	6
219388	242	276	*Sales Development Clerk	3-M	4	4	2	3	5
258358	010	488	*Salesman, Advertising advertising-sales representative advertising solicitor	2-M	4	4	3	4	6
258258	010	488	*Salesman, Art	2-M	4	4	3	3	7
258358	014	488	Salesman, Printing	2-M	4	4	2	3	6
257358	010	488	*Salesman, Public Utilities commercial sales representative	3-M	4	4	3	4	6
253358	010	488	Salesman, Radio and Television Time account executive sales executive	1-M	5	5	3	4	6
258358	018	488	Salesman, Signs	2-M	4	4	3	3	6
258258	014	488	Salesman, Signs and Displays	2-M	4	4	3	4	6
259358	018	488	Salesman, Television Cable Service contact man	1-M	3	3	2	3	3
257258	014	488	Sales Representative, Telephone Services commercial representative sales analyst	3-M	5	5	3	4	4
221588	026	289	Schedule Clerk schedule-desk man	2-E	2	2	2	2	4
971381	042	312	*Screen Maker, Photographic Process silk-screen artist silk-screen man	2-F	4	4	3	3	6
143062	046	230	Screen Reporter	1-A	4	4	3	2	8
963368	010	258	Script Assistant	1-E	3	3	2	3	6
963288	014	528	Script Reader copy reader editor	1-C	4	4	1	4	6
131088	034	524	Script Writer program writer	1-C	6	6	3	6	7
131088	038	524	Script Writer, International Broadcast	1-C	6	6	2	6	7
659488	010	501	Serviceman, Electrotype	2-M	4	4	2	3	3
239588	030	289	Service Observer monitor observer	3-E	3	3	2	3	4
239138	034	243	Service Observer, Chief monitor chief	3-K	4	4	2	3	7
979381	038	312	Siderographer	2-F	4	4	2	2	6
653782	026	435	Side-Stitching-Machine Operator	2-H	3	3	2	3	7
142081	118	232	Sign Designer sketch artist	2-B	4	4	2	2	7
869381	022	312	Sign Erector I sign hanger	2-P	3	3	2	2	6
970081	010	232	Sign Writer, Hand card writer, hand show-card writer	2-G	3	3	2	3	5
659782	034	435	Sign Writer, Machine display-card writer sign printer	2-G	3	3	1	2	4
979381	042	312	*Silk-Screen Cutter film cutter silk-screen maker stencil cutter	2-F	4	4	1	2	7
979684	038	322	*Silk-Screen Printer screen-stencil printer silk-screen tender squeegee man	2-G	2	2	1	1	5
249138	014	243	Solicitor, Head	2-K	4	4	3	3	6

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS R	M	L	SVP
213885	010	447	*Sorting-Machine Operator	2-H	2	2	1	1	3
			card-sorting-machine operator						
			sorter-machine operator						
194281	010	379	*Sound-Effects Man	1-J	3	3	2	2	6
			sound-effects technician						
194282	014	516	*Sound Mixer	1-J	5	5	2	5	7
			mixer operator						
			music mixer						
			operator, chief						
			recording engineer						
			sound man						
			studio engineer						
			studio technician						
829281	042	312	*Sound Technician	1-N	4	4	4	4	6
			inter-com installer						
			inter-com serviceman						

KEY TO TITLE LINES

DOT-Dictionary of Occupational Titles.
DOT JOB CODE-9 digit number identifying DOT Job Title.
WTG-Worker Trait Group-described on specific page of DOT, Vol. II, 1965 ed.
DOT JOB TITLE/SYNONYMS-Less common job titles for persons performing same basic work.
Underlined Job Titles-Primary occupations holding high employment potential.
Asterisk-Shared Concern Occupation-related to another cluster.
OAF-Occupational Area Family-coded to occupational area and family.

Occupational Area Codes	Occupational Areas Commonly Involved	Occupational Family Code	Occupational Family Title
1	BCO	A	Photographers
2	GCO	B	Illustrators
3	LCO	C	Correspondents
4	BCO & GCO	D	Telephone Operators
5	BCO & LCO	E	Message Assemblers
6	GCO & LCO	F	Image Carrier Preparers
7	BCO & GCO & LCO	G	Image Transferrers
		H	Finishers
		J	Telecommunications Operators
		K	Supervisors
		M	Sales-Service Representatives
		N	Telecommunications Installers
		P	Graphic Equipment Installers

LEVELS - Equal to years in school.
GED - General Educational Development
R - Reasoning Development
M - Math Development
L - Language Development

LEVEL	EQUAL TO
6	15-16 years school
5	13-14
4	9-12
3	7-8
2	4-6
1	1-3

SVP - Specific Vocational Preparation - time required to learn techniques.

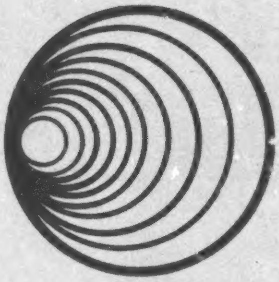
SVP LEVEL	TIME REQUIRED
1	Short Demonstration
2	Short Demonstration - 1 mo.
3	1-3 months
4	3-6 months
5	6 months - 1 year
6	1-2 years
7	2-4 years
8	4-10 years
9	Over 10 years

		WTG			LEVELS			
DOT JOB CODE		PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED R	M	L	SVP
963168	022	261	*Special-Events Man	1-K	4	4	3	4	6
003151	014	373	Special-Service Representative	3-M	5	5	4	4	8
653885	022	447	Spiral Binder wire-spiral binder	2-H	2	2	1	1	2
159148	030	400	Sports Announcer	1-C	4	4	3	4	5
971884	010	322	Stager roller painter	2-F	2	2	1	2	4
822381	050	312	Station Installer line-and-station installer telephone installer	3-N	4	4	3	3	6
822281	058	312	Station Repairman line-and-station repairman trouble shooter	3-N	3	3	3	3	6
184168	142	245	Stations-Relations-Contact Representative	1-K	5	5	3	5	8
651782	078	435	Steel-Die Printer plate-press operator plate printer	2-G	2	2	1	1	7
207885	018	447	*Stencil-Cutter Operator	2-F	2	2	1	1	2
971782	010	435	Stencil Operator, Photographic offset-plate maker process-camera operator	2-F	3	3	2	2	6
202388	018	278	Stenographer, Print Shop	2-E	3	3	2	2	5
975782	014	435	Stereotyper	2-F	3	3	2	2	8
975782	018	435	Stereotyper Apprentice	2-F	3	3	2	2	8
141081	058	232	Stipple Artist lithographic tuscher tuscher	2-B	3	3	1	2	7
977884	038	322	Stitcher, Hand back sewer sewer, hand	2-H	3	3	1	1	4
653886	026	356	Stitching-Machine Feeder	2-H	1	1	0	1	2
653780	026	433	Stitching-Machine Set-Up Man stitching-machine adjuster	2-H	3	3	2	1	7
971381	044	312	Stripper negative turner	2-F	3	3	3	2	6
971381	046	312	Stripper Apprentice stripper-and-opaquer apprentice negative-turner apprentice	2-F	3	3	3	2	6
822281	062	312	Submarine-Cable Station Technician cable-station technician testboardman	3-N	3	3	3	2	6
184118	070	237	Superintendent, Communications plant chief	3-K	6	6	4	5	8
184168	206	245	Superintendent, Station chief tester	3-K	5	5	4	5	7
962138	022	243	Supervising Film Editor	1-K	5	5	3	4	8
239138	038	243	Supervisor, Automatic Equipment	3-K	4	4	2	3	7
213138	010	243	*Supervisor, Computer Operations	2-K	5	5	5	5	7
969138	010	305	*Supervisor, Costumes	1-K	4	4	3	4	7
205138	014	243	Supervisor, Force Adjustment	3-K	5	5	4	5	7
213138	014	243	*Supervisor, Machine-Records Unit supervisor, machine-tabulating unit tabulating supervisor	2-K	4	4	3	4	7
230138	010	243	Supervisor, Messengers	3-K	4	4	2	3	6
132038	038	522	Supervisor, Publications director, publications publications officer	2-C	5	5	4	5	8
239138	042	243	Supervisor, Route	3-K	4	4	2	3	6
235862	022	291	Switchboard Operator, Police District	3-D	3	3	2	3	4
235585	010	282	Switching Clerk reperforator operator	3-E	3	3	2	3	4

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS			SVP
						R	M	L	
651782	086	435	*Tab-Card-Press Operator	2-G	3	3	2	1	7
213782	010	435	*Tabulating-Machine Operator tabulating-equipment operator tabulator operator	2-E	3	3	2	1	5
720281	014	312	*Tape-Recorder Repairman	1-N	4	4	3	3	7
017281	086	377	Technical Illustrator engineering illustrator production illustrator	2-B	4	4	4	4	7
208588	022	287	*Telautograph Operator	3-J	3	3	1	3	3
957382	014	516	Telecine Operator	1-J	4	4	2	3	5
003081	090	371	Telecommunications-Service Engineer planner, telecommunication service services engineer	3-M	5	5	5	5	7
236382	010	274	Telefax Clerk	3-E	4	4	2	3	2
239138	046	243	Telefax Supervisor	3-K	4	4	3	3	6
003081	094	371	Telegraph Engineer	3-N	6	6	5	5	7
203588	014	287	Telegraphic-Typewriter Operator telegraph operator, automatic	3-E	3	3	1	2	4
203138	010	243	Telegraphic-Typewriter Operator Chief	3-K	4	4	2	3	7
230368	010	258	Telegraph Messenger II telephone messenger	3-E	3	3	2	3	4
822381	054	312	Telegraph-Plant Maintainer equipment installer maintainer, central office maintainer, equipment maintainer, plant	3-N	4	4	3	3	7
219588	054	289	Telegraph-Service Rater clerk, rating rate marker	3-E	2	2	2	2	2
235862	030	291	*Telephone-Answering-Service Operator interceptor operator telephone-interceptor operator	3-D	4	4	2	3	3
003081	098	371	Telephone Engineer	3-N	6	6	5	5	8
822381	058	312	Telephone Inspector	3-N	4	4	3	3	7
235862	026	291	*Telephone Operator control-board operator p.b.x. operator private-branch-exchange operator switchboard operator telephone-switchboard operator	3-D	3	3	2	3	3
235138	014	243	*Telephone Operator Chief	3-K	4	4	3	4	6
963382	010	514	Teleprompter Operator	1-J	2	2	2	2	5
821281	022	312	Television-Cable Lineman	1-N	4	4	3	3	5
143168	010	245	Television-Film Field Coordinator	1-K	5	5	3	3	7
823781	010	319	Television-Installation Man	1-N	4	4	3	3	6
199388	014	276	Television-Schedule Coordinator program schedule clerk	1-M	4	4	2	4	6
720281	018	312	*Television Service & Repairman television and radio repairman television repairman	1-N	4	4	3	3	7
720281	022	312	*Television Service & Repairman Apprentice radio-television-repairman apprentice television and radio serviceman apprentice television-repairman apprentice	1-N	4	4	3	3	7
822381	062	312	Test Deskman dispatcher local-test deskman testman testboardman toll-test deskman	3-N	4	4	3	3	6
822131	026	299	Test-Desk Supervisor	3-K	4	4	3	3	7

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	LEVELS GED	R	M	L	SVP
184168	258	245	Testing-and-Regulating Chief	3-K	5	5	4	5	8
822281	066	312	Testing-and-Regulating Technician automatic maintainer regulating-and-testing man repeater attendant technician, terminal and repeater technician, wire and repeater wire-and-repeater technician tester, equipment	3-N	4	4	3	3	7
977884	042	322	Tipper gluer hand gluer	2-H	3	3	1	2	3
219488	066	280	Toll Rating Clerk	3-M	3	3	2	2	3
017281	090	377	*Tracer draftsman, junior	7-B	3	3	3	2	7
[illegible]84168	262	245	*Traffic Chief, Radio Communications dispatcher, radio	3-K	5	5	5	5	7
651782	090	435	Transfer Operator	2-G	3	3	2	1	4
972381	014	312	Transferrer I composer lithographic-press-plate maker, photomechanical plate maker	2-F	4	4	3	2	8
972781	010	319	Transferrer II press-plate maker transfer man	2-F	2	2	1	1	7
972381	016	312	Transferrer Apprentice lithographic-press-plate-maker apprentice, photomechanical plate-maker apprentice, lithographic	2-F	4	4	3	2	8
972381	018	312	Transferrer Apprentice, Hand lithographic-press-plate-maker apprentice, hand transfer	2-F	3	3	1	1	8
972381	022	312	Transferrer, Hand lithographic-press-plate maker, hand transfer transfer man, hand	2-F	3	3	1	1	8
209588	062	287	*Translator, Braille braille coder braille transcriber	2-E	4	4	2	3	5
137288	026	528	Translator, Radio Communications	3-C	5	5	2	5	7
003187	070	381	Transmission-and-Protection Engineer transmission engineer	3-N	5	5	5	5	8
003187	062	381	Transmission Engineer	5-J	5	5	5	5	7
822381	066	312	Transmission Man transmission tester	3-N	4	4	3	3	7
957282	022	516	Transmitter Operator transmitter engineer	1-J	4	4	3	3	7
208588	030	287	Typesetter-Perforator Operator perforator perforator operator	2-E	3	3	1	3	4
650885	010	447	Typesetting-Machine Tender teletypesetter monitor	2-E	3	3	1	2	4
207782	030	435	Typewriter Operator, Automatic	2-E	3	3	1	3	4
973388	010	276	Typographer-Proofer	2-E	3	3	2	3	5
692885	286	447	Vacuum-Applicator Operator	2-G	2	2	2	1	2
203582	010	274	*Vari-Typist	2-E	3	3	2	2	4
534885	046	447	Varnishing-Machine Operator	2-G	2	2	2	1	2
213588	014	287	*Verifier Operator	2-E	3	3	2	2	5

DOT JOB CODE		WTG PAGE	DOT JOB TITLE/SYNONYMS	OAF	GED	LEVELS			SVP
						R	M	L	
957282	026	516	Video Operator camera-control operator color-television-console monitor video engineer	1-J	4	4	3	3	7
963382	014	514	Video-Recording Engineer	1-J	4	4	3	4	7
194782	022	435	Videotape-Recording Engineer	1-J	4	4	3	3	7
651782	094	435	Web-Press Man web-press operator	2-G	3	3	2	2	7
651782	098	435	Web-Press Man Apprentice newspaper-press man apprentice	2-G	3	3	2	2	7
234885	026	447	*Wing-Mailer-Machine Operator	2-H	2	2	1	1	2
239382	010	274	Wire-Photo Operator, News	4-E	4	4	2	2	5
159148	034	400	Writer-Announcer, Bilingual, International Broadcast announcer-translator, foreign language	1-C	5	5	2	5	6
131068	014	522	Writer, News, International Broadcast	1-C	6	6	3	6	7
131068	046	524	Writer, News-or-Script, Foreign Language	1-C	6	6	3	6	7
139288	014	387	Writer, Technical Publications handbook writer service-publication writer technical editor technical writer writer, publications	2-C	5	5	5	5	7
972382	013	514	Xerography-Machine Operator xerography operator	2-F	2	2	1	1	6



DEFINING AND ORGANIZING THE CLUSTER

The U.S. Office of Education (USOE) describes the role of career clusters as an organizational technique to facilitate the delivery of career education at the State and local level. It has proposed a cluster scheme — 15 career clusters — believed to meet the need. "Draft" charts representing a "first cut" at blocking out the scope of each cluster were developed. These charts were recognized as needing refinement, but illustrated the nature and content of each of the proposed clusters.

An initial task given each USOE cluster contractor was the "review, analysis, and modification" of the USOE DRAFT (4-1-71) of that cluster. It did not specify a tested procedure for defining the DOT job titles to be included within a USOE career cluster. In response, contractors independently defined DOT cluster content, curriculum and relevant resources to meet their perceived needs.

The CMO Cluster project focused its efforts on testing a systematic approach to review, analyze and modify the original USOE DRAFT. The result of applying the World of Work (WOW) Function concept to the USOE Communications Media Occupations cluster follows.

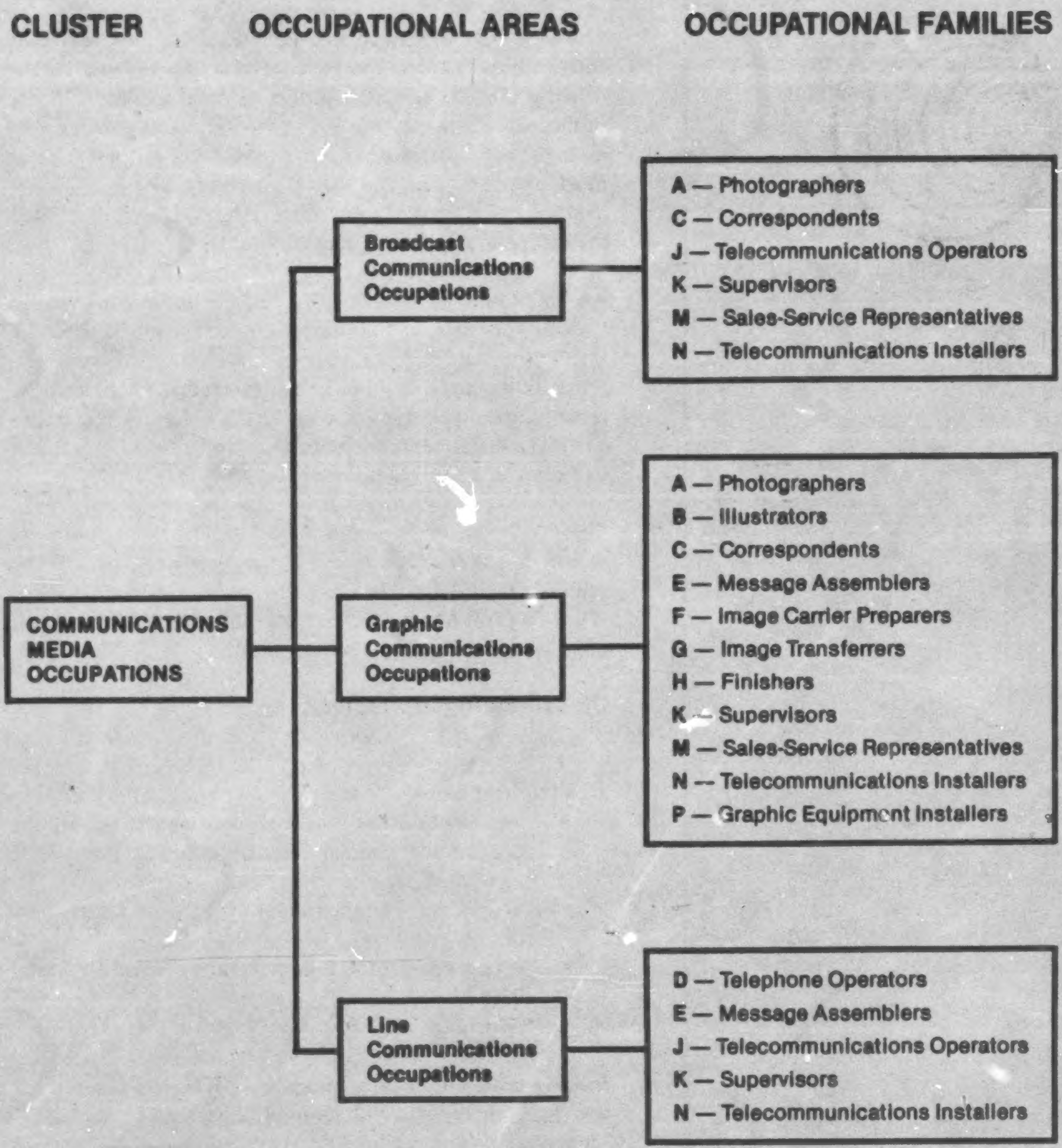
Classification Procedures

The basic materials used to define the CMO cluster occupational content were:

- USOE publications (4/1/71 DRAFT) describing the occupational content and structure of the USOE career clusters;
- Dictionary Of Occupational Titles, (Vol. I & II, 1965 ed);
- A Taxonomy of Communication Media, R. Bretz, 1971;
- "World-of-Work Function" concept.

Initial analyses to identify potential CMOs were made at the two-digit, three-digit and six-digit categories of the DOT. Final analysis was made at the nine-digit occupational (job) title level using the job descriptions contained in DOT Volume I.

CLUSTER OCCUPATIONAL AREAS OCCUPATIONAL FAMILIES



- **COMMUNICATIONS MEDIA OCCUPATIONS**
  - **Broadcast Communications Occupations**
    - A — Photographers
    - C — Correspondents
    - J — Telecommunications Operators
    - K — Supervisors
    - M — Sales-Service Representatives
    - N — Telecommunications Installers
  - **Graphic Communications Occupations**
    - A — Photographers
    - B — Illustrators
    - C — Correspondents
    - E — Message Assemblers
    - F — Image Carrier Preparers
    - G — Image Transferrers
    - H — Finishers
    - K — Supervisors
    - M — Sales-Service Representatives
    - N — Telecommunications Installers
    - P — Graphic Equipment Installers
  - **Line Communications Occupations**
    - D — Telephone Operators
    - E — Message Assemblers
    - J — Telecommunications Operators
    - K — Supervisors
    - N — Telecommunications Installers

On this basis, more than 2,000 DOT job titles/definitions were selected, reviewed and analyzed. Approximately 550 Communication Media Occupations were identified and grouped initially into three major occupational areas:

Broadcast Communications Occupations (BCO)	100 +
Graphic Communications Occupations (GCO)	300 +
Line Communications Occupations (LCO)	100 +

- Broadcast Communications Occupations are those involved in the distribution of messages from a point (a transmitter) to the message receiver. The receiver has the equipment necessary to receive the message, e.g., radio/television.
- Line Communications Occupations are those involved in the distribution of the message from point A (message sender) to a designated point B (message receiver). The message would be transmitted within the message distribution system, e.g., telephone/telegraph.

Broadcast and Line Communications are commonly referred to as telecommunications. They are message distribution systems that give the message receiver the impression the message is being distributed in real time (instantly).

- Graphic Communications Occupations involve the distribution of messages by placing the message upon solid material in a format that the message receiver can read directly. The graphic messages produced, e.g., books, magazines, newspapers, etc., are distributed to the message receiver(s). The products of graphic communications message distribution systems indicate the message has been recorded for distribution "over time". It is not a telecommunication being distributed in "real time."

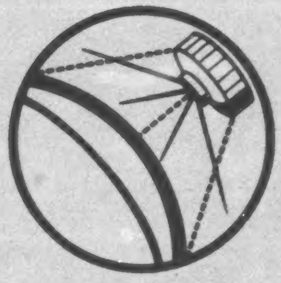
CMO Occupational Families were created as a further subgrouping of CMO cluster occupational areas. The procedures used were based on worker function requirements common to those of selected primary occupations having projected high employment potential. The cluster/occupational area/occupational family relationship is illustrated on the opposite page.

Each of the CMO cluster job titles was initially identified as serving a distribution world-of-work function: The distribution of messages. However, each CMO job title also serves a secondary "World-of-Work Function" in relation to the message distribution system involved. The following question was asked concerning each CMO primary occupation:

> What secondary "World-of-Work Function" — production, direct service (to people), organization management, distribution, technical service (message distribution system support) — does this job title serve in relation to the message distribution system utilized?

This procedure identified one or more primary occupations that provided a core element for organizing the occupational families:

Coding	**Titles**
A	Photographers (BCO-GCO)
B	Illustrators (GCO)
C	Correspondents (BCO-GCO)
D	Telephone Operators (LCO)
E	Message Assemblers (GCO-LCO)
F	Image Carrier Preparers (GCO)
G	Image Transferrers (GCO)
H	Finishers (GCO)
J	Telecommunications Operators (BCO-LCO)
K	Supervisors (BCO-GCO-LCO)
M	Sales-Service Representatives (BCO-GCO-LCO)
N	Telecommunications Installers (BCO-LCO)
P	Graphic Equipment Installers (GCO)



CMO OCCUPATIONAL FAMILIES

<table>
<tr><th colspan="2" rowspan="2">"WORLD-OF-WORK" FUNCTIONS</th><th colspan="3">CMO MESSAGE DISTRIBUTION SYSTEMS</th></tr>
<tr><th>BROADCAST</th><th>LINE</th><th>GRAPHIC</th></tr>
<tr><td colspan="2">DIRECT SERVICE (TO PEOPLE)</td><td colspan="3">NO CMO OCCUPATION PROVIDES A DIRECT SERVICE TO THE MESSAGE SENDER</td></tr>
<tr><td rowspan="5">PRODUCTION</td><td>SELECT A DESIGN</td><td>PHOTOGRAPHERS (A)
CORRESPONDENTS (C)</td><td>TELEPHONE OPERATORS (D)</td><td>PHOTOGRAPHERS (A)
ILLUSTRATORS (B)
CORRESPONDENTS (C)</td></tr>
<tr><td rowspan="2">MAKE READY TO ASSEMBLE/ PRODUCE</td><td colspan="3">MESSAGE "ASSEMBLERS" (E)</td></tr>
<tr><td colspan="2" rowspan="2">TELECOMMUNICATION "OPERATORS" (J)</td><td>IMAGE CARRIER "PREPARERS" (F)</td></tr>
<tr><td>ASSEMBLE/ PRODUCE</td><td>IMAGE "TRANSFERRERS" (G)</td></tr>
<tr><td>FINISH PACKAGING</td><td colspan="2"></td><td>"FINISHERS" (H)</td></tr>
<tr><td colspan="2">ORGANIZATION-MANAGEMENT</td><td colspan="3">SUPERVISORS (K)</td></tr>
<tr><td colspan="2">DISTRIBUTION</td><td colspan="3">SALES-SERVICE REPRESENTATIVES (M)</td></tr>
<tr><td colspan="2">TECHNICAL SERVICES (MDS SUPPORT)</td><td colspan="2">TELECOMMUNICATIONS "INSTALLERS" (N)</td><td>GRAPHIC EQUIPMENT "INSTALLERS" (P)</td></tr>
</table>

Occupational Family: PHOTOGRAPHERS (A)

BROADCAST
GRAPHIC

WTG Page: 230 (AEL WTG 3)

The occupational family, PHOTOGRAPHERS (A), offers employment opportunity in the Broadcast and Graphic communications occupational areas. The primary occupation—high employment potential job title—is:

DOT Job Title	WTG Page	AEL WTG	DOT #
Photographer, News	230	3	143062038

The job titles in this occupational family involve the use of photography as a technology to select a design for the production of the message that is to be distributed via the Broadcast and Graphic communications distribution systems. These job titles all require graduation from high school. An additional year or two of posthigh school training and two to four years of experience is required for most job titles in this occupational family. For specific information on any job title refer to the GED and SVP levels of education, training and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 230 (AEL WTG 3)	DOT #
Cameraman	143062010
Photographer Apprentice, Commercial	143062026
Photographer, Commercial	143062034
Screen Reporter	143062046

Occupational Family: ILLUSTRATORS (B) GRAPHIC

WTG Pages: 232, 312, 377 (AEL WTG 4, 37, 56)

The occupational family, ILLUSTRATORS (B), offers greatest employment opportunity in the Graphic communications occupational area. The primary occupations—high employment potential job titles—are:

DOT Job Title	WTG Page	AEL WTG	DOT #
Advertising Lay-Out Man	232	4	141081010
Art Lay-Out Man	232	4	141081014
Illustrator	232	4	141081042
Lay-Out Man	232	4	141081046

The job titles in this occupational family involve the use of drawing and drafting technologies, as well as selected photographic and printing products, to select a design for the production of the message that is to be distributed via the Graphic distribution system. All of these job titles require a high school education and one or two years of post-high school education or training. Most require two to four years of experience or equivalent training. For specific information on any job title refer to the GED and SVP levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 232 (AEL WTG 4)	DOT #
Cartoonist	144081014
Cover Designer	141081034
Sign Designer	142081118
Stipple Artist	141081058

WTG Page 312 (AEL WTG 37)	DOT #
Ben-Day Artist	970381010
Delineator	970281014
Engrosser	970381018
Form Designer	970281018
Letterer	970381030

WTG Page 377 (AEL WTG 56)	DOT #
Cable-Lay-Out Man	017281022
Detailer	017281034
Drafting Clerk	249281010
Draftsman Apprentice	017281038
Draftsman, Black & White	017281042
Draftsman, Commercial	017281046
Draftsman, Detail	017281050
Draftsman, Electronic	003281014
Technical Illustrator	017281086
Tracer	017281090

Occupational Family: CORRESPONDENTS (C)

BROADCAST
GRAPHIC

WTG Pages: 276, 387, 400, 482, 522, 524, 526, 528
(AEL WTG 24, 61, 67, 94, 111, 112, 113, 114)

The occupational family, CORRESPONDENTS (C), offers employment opportunity in the Broadcast and Graphic communications occupational areas. The primary occupations —high employment potential job titles — are:

DOT Job Title	WTG Page	AEL WTG	DOT #
Announcer	400	67	159148010
Disk Jockey	400	67	159148022
Public-Relations Man II	482	94	165068022
Editor, Department	522	111	132038014
Editor, Newspaper	522	111	132018014
News Analyst, Broadcast	522	111	131068010
Copy Writer	524	112	132088010
Correspondent	526	113	132268010
Reporter	526	113	132268018

The job titles in this occupational family involve writing and/or speaking as technologies to select a design for the production of the message that is to be distributed via the Broadcast and Graphic communications distribution systems. These job titles all require a high school education. Most require at least two years of post-high school education in a college or technical school. Some presently require four years of college prior to job entry. More are beginning to do so. The amount of training and/or experience needed for these job titles varies from only six months to over ten years. For more specific information on any job title refer to the GED and SVP levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 276 (AEL WTG 24)	**DOT #**
Editor, Index	132388010

WTG Page 387 (AEL WTG 61)	**DOT #**
Writer, Technical Publications	139288014

WTG Page 400 (AEL WTG 67)	**DOT #**
Announcer, International Broadcast	159148018
Sports Announcer	159148030
Writer-Announcer, Bilingual, International Broadcast	159148034

WTG Page 482 (AEL WTG 94)	**DOT #**
Public Program Supervisor	165068014
Public-Relations Man I	165068018

WTG Page 522 (AEL WTG 111)	**DOT #**
Columnist	132068010
Editor, Book	132068014
Editor, Cable Syndicate	132068018
Editor, City	132038010
Editor, Continuity & Script	131038010
Editor, Editorial Page	132038018
Editor, Financial	132038022
Editor, Foreign News, Broadcast	131038014
Editor, Magazine	132068022
Editor, Managing Newspaper	132018010
Editor, News	131038018
Editor, News	132068026
Editor, Sports	132038026
Editor, State	132038030
Editor, Trade-or-Technical Publication	132038034
Manager, News, Special Events, and Public Affairs	131038026
Manager, Technical-and-Scientific Publications	132018018
News Specialist, Syndicate	132068030
Supervisor, Publications	132038038
Writer, News, International Broadcast	131068014

WTG Page 524 (AEL WTG 112)	**DOT #**
Continuity Writer	131088010
Critic	132088014
Editor, Greeting Card	139088018
Editorial Writer	132088018
Lexicographer	132088022
Script Writer	131088034
Script Writer, International Broadcast	131088038
Writer, News-or-Script, Foreign Language	131088046

WTG Page 526 (AEL WTG 113)	**DOT #**
Feature Reporter	132268014
Rewrite Man	132268022

WTG Page 528 (AEL WTG 114)	**DOT #**
Book Critic	132288010
Copyist	152288010
Copy Reader	132288014
Copy Reader, Book	132288018
Copyright Expert	963288010
Editing Clerk	132288022
Editor, News Photograph	132288026
Editor, Picture	132288030
Editor, Telegraph	132288034
Editorial Assistant	132288038
Foreign-News Translator	137288018
Reader, First	132288042
Script Reader	963288014
Translator, Radio Communications	137288026

Occupational Family: TELEPHONE "OPERATORS" (D) LINE

WTG Page: 291 (AEL WTG 30)

The occupational family, TELEPHONE "OPERATORS" (D), offers employment opportunity in the Line communications occupational area. The primary occupations—high employment potential job titles—are:

DOT Job Title	WTG Page	AEL WTG	DOT #
Central-Office Operator	291	30	235862010
Telephone Operator	291	30	235862026

The job titles in this occupational family primarily serve the world of work function of selecting the design that will provide the desired distribution of the message via the Line communications distribution system. These job titles do not require completion of a high school education. In practice, however, most employers prefer to hire persons with a high school education or a person with the GED equivalent.

Entry into these job titles is almost exclusively through training programs conducted by the employer. Training usually takes about two weeks. Some programs last only a day or two with continuing on-the-job training. Advanced training programs for special equipment could involve several months. For specific information on any job title refer to the GED and SVP levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 291 (AEL WTG 30)	DOT #
Gamewell Operator	235862014
Information Operator	235862018
Switchboard Operator, Police District	235862022
Telephone-Answering-Service Operator	235862030

Occupational Family: MESSAGE "ASSEMBLERS" (E)

GRAPHIC
LINE

WTG Pages: 258, 261, 274, 276, 278, 282, 287, 289, 308, 312, 360, 435, 447, 514
(AEL WTG 16, 17, 23, 24, 25, 27, 28, 29, 35, 37, 52, 82, 84, 108)

The occupational family, MESSAGE "ASSEMBLERS" (E), offers employment opportunity primarily in the Graphic and Line communications occupational areas. The primary occupations—high employment potential job titles—are:

DOT Job Title	WTG Page	AEL WTG	DOT #
Contract Clerk	258	16	249368018
Linofilm-Machine Operator	274	23	650582010
Classified-Ad Clerk	276	24	209388018
Proofreader	289	29	209688034
Paste-Up Man	312	37	979381030

The job titles in this occupational family contribute to the function of producing messages for distribution—assemble and/or produce the "bits and pieces" necessary to prepare the message as specified—via the Broadcast, Graphic, or Line communications message distribution systems. Most of the job titles are Graphic communications occupations and most of the Line communications occupations involve telegraphy.

Most of these job titles do not require a high school education but employers tend to give preference to such job applicants. The level of training and experience required varies from as little as short demonstrations on the job to as much as ten years. Most, however, fall in the range of three months to one year. For specific information on any job title refer to the GED and SVP levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 258 (AEL WTG 16)	**DOT #**
Counter Clerk	239368010
Counter Clerk	249368022
Script Assistant	963368010
Telegraph Messenger II	230368010

WTG Page 261 (AEL WTG 17)	**DOT #**
Copy Cutter	249168010

WTG Page 274 (AEL WTG 23)	**DOT #**
Card-Tape-Converter Operator	213382010
Computer-Peripheral-Equipment Operator	213382014
Digital-Computer Operator	213382018
High-Speed-Printer Operator	213382022
Justowriter Operator	209382010
Key-Punch Operator	213582010
Linotype Operator	650582014
Monotype-Keyboard Operator	650582018
Phototypesetter Operator	650582022
Telefax Clerk	236382010
Vari-Typist	203582010
Wire-Photo Operator, News	239382010

WTG Page 276 (AEL WTG 24)	DOT #
Clerk, Telegraph Service	219388070
Coding Clerk	219388074
Cut Man	206388014
Librarian	206388030
Music Librarian	100338022
Music Librarian, International Broadcast	100338026
Radio-Message Router	235388010
Typographer-Proofer	973388010

WTG Page 278 (AEL WTG 25)	DOT #
Stenographer, Print Shop	202388018

WTG Page 282 (AEL WTG 27)	DOT #
Inkman	659687014
Switching Clerk	235585010

WTG Page 287 (AEL WTG 28)	DOT #
Braille-Machine Operator	208588010
Cryptographic-Machine Operator	208588014
Data Typist	213588010
Music Copyist	152588010
Perforator Typist	203588010
Photocomposing-Machine Perforator Operator	208588018
Telegraphic-Typewriter Operator	203588014
Translator, Braille	209588062
Typesetter-Perforator Operator	208588030
Verifier Operator	213588014

WTG Page 289 (AEL WTG 29)	DOT #
Braille Proofreader	209688010
Broadcast Checker	249688010
Clerk, Directory	239588014
Clerk, Inspection	239688010
Clerk, Route	235588010
Copy Holder	209588026
Display-Desk Clerk	209688022
Jacket Preparer	221588018
Schedule Clerk	221588026
Service Observer	239588030
Telegraph-Service Rater	219588054

WTG Page 308 (AEL WTG 35)	DOT #
Costumer	969261010

WTG Page 312 (AEL WTG 37)	DOT #
Airbrush Artist	970281010
Copy Cameraman	979381010
Developer	976381010
Glass Bender	772381010
Lay-Out Man I	772381014
Lay-Out Man II	970381026
Music Grapher	970381034
Paste-Up Man Apprentice	979381034
Process Artist	972281010
Process-Artist Apprentice	972281014
Reproduction Technician	976381022

WTG Page 360 (AEL WTG 52)	DOT #
Cameraman Assistant	963887010
Clerk-Draftsman	249887010
Property Handler	962887014

WTG Page 435 (AEL WTG 82)	DOT #
Casting-Machine Operator	654782010
Ludlow-Machine Operator	654782014
Photocomposing-Machine Operator	650782010
Tabulating-Machine Operator	213782010
Typewriter Operator, Automatic	207782030

WTG Page 447 (AEL WTG 84)	DOT #
Metal Man	502885014
Paper Conditioner	659885010
Photolettering-Machine Operator	652885070
Typesetting-Machine Tender	650885010

WTG Page 514 (AEL WTG 106)	DOT #
Photographer, Lithographic	972382010
Photographer, Photoengraving	971382010
Photolithographer Apprentice	972382014
Photostat Operator	979382010

Occupational Family: IMAGE CARRIER "PREPARERS" (F) GRAPHIC

WTG Pages: 282, 312, 319, 322, 360, 430, 435, 447, 514
(AEL WTG 27, 37, 38, 39, 52, 80, 82, 84, 108)

The occupational family, IMAGE CARRIER "PREPARERS" (F), offers employment opportunity in the Graphic communications occupational area. The primary occupations—high employment potential job titles—are:

DOT Job Title	WTG Page	AEL WTG	DOT #
Lithographer	312	37	971281014
Stripper	312	37	971381044
Transferrer I	312	37	972381014

The job titles in this occupational family contribute to the function of producing graphic messages for distribution—prepare the message on the image carrier selected—via the Graphic communications message distribution system.

Not all of these job titles require a high school education, but employers tend to give preference to such job applicants. Training and experience required for these job titles varies from a short demonstration to as much as ten years. For specific information on any job title refer to the GED and SVP levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 282 (AEL WTG 27)	DOT #
Blocker II	971684010

WTG Page 312 (AEL WTG 37)	DOT #
Compositor I	973381010
Compositor Apprentice	973381014
Correction Man	973381018
Electrotyper	974381010
Electrotyper Apprentice	974381014
Engraver, Block	979281014
Etcher Apprentice, Photoengraving	971381010
Etcher, Hand	971281010
Etcher, Photoengraving	971381014
Imposer	973381022
Line-Up Man	979381022
Make-Up Man	973381034
Music Engraver	979381026
Overlay Cutter	651381010
Photoengraver	971381018
Photoengraver Apprentice	971381022
Photoengraving Finisher	971381026

Photoengraving Proofer	971381034
Photoengraving-Proofer Apprentice	971381038
Repeat Chief	970381054
Retoucher, Photoengraving	970381058
Screen Maker, Photographic Process	971381042
Siderographer	979381038
Silk-Screen Cutter	979381042
Stereotyper	975782014
Stripper Apprentice	971381046
Transferrer Apprentice	972381016
Transferrer, Hand	972381022
Transferrer Apprentice, Hand	972381018

WTG Page 319 (AEL WTG 38)	**DOT #**
Cylinder Grinder	500781010
Transferrer II	972781010

WTG Page 322 (AEL WTG 39)	**DOT #**
Carbon Printer	976884010
Contact-Frame Operator	976884018
Electric Sign Assembler	729884030
Engraver	979884010
Pumpman	824884018
Stager	971884010

WTG Page 360 (AEL WTG 52)	**DOT #**
Etcher Helper, Hand	971887010
Plate Setter	972887010

WTG Page 430 (AEL WTG 80)	**DOT #**
Plate Finisher	659380010

WTG Page 435 (AEL WTG 82)	**DOT #**
Blocker I	979782010
Blocker, Metal Base	975782010
Clamper	979782018
Plate Grainer	972782010
Plate Grainer Apprentice	972782014
Router	979782038
Stencil Operator, Photographic	971782010
Stereotyper Apprentice	975782018

WTG Page 447 (AEL WTG 84)	**DOT #**
Copyman I	971885010
Stencil-Cutter Operator	207885018

WTG Page 514 (AEL WTG 108)	**DOT #**
Xerography-Machine Operator	972382018

Occupational Family: IMAGE TRANSFERRERS (G)

WTG Pages: 232, 274, 312, 322, 356, 360, 435, 447
(AEL WTG 4, 23, 37, 39, 51, 52, 82, 84)

The occupational family, IMAGE TRANSFERRERS (G), offers employment opportunity in the Graphic communications occupational area. The primary occupations—high employment potential job titles—are:

DOT Job Title	WTG Page	AEL WTG	DOT #
Painter, Sign	312	37	970381046
Offset-Duplicating-Machine Operator	435	82	207782026
Offset-Press Man	435	82	651782042

The job titles in this occupational family contribute to the message production function—transfer of the graphic message to the material to be distributed to the message receiver (a page of a book, a sign, etc.)—in Graphic communications message distribution systems.

Not all of these job titles require a high school education, but employers tend to give preference to such job applicants. Training and experience required for these job titles varies from a short demonstration to as much as ten years. For specific information on any job title refer to the GED and SVP levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 232 (AEL WTG 4)	DOT #
Printmaker	979081010
Sign Writer, Hand	970081010

WTG Page 274 (AEL WTG 23)	DOT #
Braille-Duplicating-Machine Operator	207582010

WTG Page 312 (AEL WTG 37)	DOT #
Diorama Model-Maker	739381030
Display Assembler	739381034
Job Printer	973381026
Job Printer Apprentice	973381030
Photoengraving Printer	971381030

WTG Page 322 (AEL WTG 39)	DOT #
Duplicating-Machine Operator I	207884010
Gold-Leaf Stamper	979884018
Impression Man	979884022
Silk-Screen Printer	979884038

WTG Page 356 (AEL WTG 51)	DOT #
Cylinder-Press Feeder	651886010
Lithographic-Press-Feeder Apprentice	651886014
Print-Shop Helper	979886010
Raised Printer	652886026

WTG Page 360 (AEL WTG 52)	**DOT #**
Photolith Operator	979887010

WTG Page 435 (AEL WTG 82)	**DOT #**
Blueprinting-Machine Operator	979782014
Copy Operator	207782010
Cylinder-Press Man	651782010
Cylinder-Press Man Apprentice	651782014
Duplicating-Machine Operator II	207782014
Duplicating-Machine Operator III	207782018
Embosser	659782018
Embossing-Press Operator	659782022
Embossing-Press Operator Apprentice	659782026
Engraving-Press Operator	651782018
Flexographic-Press Man I	651782022
Flexographic-Press Man II	651782026
Lithographic Proofer	651782030
Lithographic-Proofer Apprentice	651782034
Mimeograph Operator	207782022
Offset-Duplicating-Machine Operator	651782038
Offset-Press Man Apprentice	651782046
Offset-Proof-Press Operator	651782050
Platen-Press Man	651782054
Platen-Press Man Apprentice	651782058
Printing-Press Operator	651782066
Proofing-Machine Operator	979782030
Proof-Press Man	651782070
Rotogravure-Press Man	651782074
Sign Writer, Machine	659782034
Steel-Die Printer	651782078
Tab-Card-Press Operator	651782086
Transfer Operator	651782090
Web-Press Man	651782094
Web-Press Man Apprentice	651782098

WTG Page 447 (AEL WTG 84)	**DOT #**
Duplicating-Machine Operator IV	207885010
Keying-Machine Operator	652885050
Offset-Press Operator	651885014
Photographic-Machine Operator	207885014
Platen-Press Feeder	651885018
Vacuum-Applicator Operator	692885286
Varnishing-Machine Operator	534885046

Occupational Family: FINISHERS (H)

WTG Pages: 274, 282, 319, 322, 356, 360, 433, 435, 447
(AEL WTG 23, 27, 38, 39, 51, 52, 81, 82, 84)

The occupational family, FINISHERS (H), offers employment opportunity in the Graphic communications occupational area. The primary occupation—high employment potential job title—is:

DOT Job Title	WTG Page	AEL WTG	DOT #
Bindery Worker	447	84	643885010

The function of the job titles in this occupational family—organize and assemble in final form the materials to be distributed as a "graphics package" (a book, a magazine, a pamphlet, etc.)—is served by technology in the Broadcast and Line communications message distribution systems. Emerging automated graphic technology has virtually "finished off" employment opportunity in all of these job titles. Within a few years reduced cost of automated equipment and competitive economic pressure will probably relegate these occupational knowledges and skills to art forms or activities engaged in as leisure activities.

None of the job titles in this occupational family require a high school education. Most can be entered with a tenth grade education or less. The training and experience required by these job titles varies from just more than a short demonstration to up to as many as ten years. The majority, however, require six months or less of training and/or experience. For specific information on any job title refer to the GED and SVP levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 274 (AEL WTG 23)	DOT #
Addressing-Machine Operator	234582010

WTG Page 282 (AEL WTG 27)	DOT #
Collator	653687010
Counter	659687010
Examiner	979687010
Mailer	239587010
Mailer Apprentice	239587014
Racker, Silk-Screen Printing	659687018

WTG Page 319 (AEL WTG 38)	DOT #
Bookbinder, Hand	977781010

WTG Page 322 (AEL WTG 39)	DOT #
Airbrush Operator	970884010
Bookbinder	977884014
Bookbinder Apprentice	977884018
Book Repairer	977884010
Caser	977884022
Colorer	970884014
Coverer, Looseleaf Binder	977884026
Inlayer	977884030

Map-and-Chart Mounter	979884026
Painter, Airbrush	970884018
Presser	977884034
Stitcher, Hand	977884038
Tipper	977884042

WTG Page 356 (AEL WTG 51)	DOT #
Casing-in-Line Feeder	653886010
Folding-Machine Feeder	653886014
Gathering-Machine Feeder	653886018
Perfect-Binder Feeder	653886022
Stitching-Machine Feeder	653886026

WTG Page 360 (AEL WTG 52)	DOT #
Assembler, Greeting Card	794887010
Bookmaker, Map	977887010
Jogger	659887010
Newspaper Inserter	249887018
Photostatic-Print Cutter	979887014

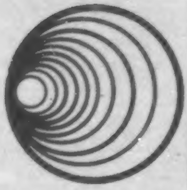
WTG Page 433 (AEL WTG 81)	DOT #
Casting-In-Line Set-Up Man	653780010
Folding-Machine Set-Up Man	653780014
Gathering-Machine Set-Up Man	653780018
Perfect-Binder Set-Up Man	653780022
Stitching-Machine Set-Up Man	653780026

WTG Page 435 (AEL WTG 82)	DOT #
Book-Sewing-Machine Operator II	977782010
Covering-Machine Operator	653782010
Cutting-Machine Operator	649782014
Folding-Machine Operator	653782014
Head-Bander-and-Liner Operator	653782018
New-Era-Unit Operator	641782014
Saddle-Stitching-Machine Operator	653782022
Side-Stitching-Machine Operator	653782026

WTG Page 447 (AEL WTG 84)	DOT #
Book-Sewing-Machine Operator I	653885010
Book Trimmer	640885010
Case-Making-Machine Operator	977885010
Collating-Machine Operator	653885014
Envelope-Sealing-Machine Operator	234885010
Folding-Machine Operator	234885014
Inserting-Machine Operator	234885018
Perforating-Machine Operator	659885014
Rounding-and-Backing-Machine Operator	653885018
Saddle-and-Side Wire Stitcher	692885194
Sorting-Machine Operator	213885010
Spiral Binder	653885022
Wing-Mailer-Machine Operator	234885026

Occupational Family: TELECOMMUNICATIONS "OPERATORS" (J)

BROADCAST LINE



WTG Pages: 287, 312, 371, 379, 381, 435, 514, 516
(AEL WTG 28, 37, 53, 57, 58, 82, 108, 109)

The occupational family, TELECOMMUNICATIONS "OPERATORS" (J), offers employment opportunity in the Broadcast and Line communications occupational areas. The primary occupations—high employment potential job titles—are:

DOT Job Title	WTG Page	AEL WTG	DOT #
Field Engineer	312	37	829281034
Audio Engineer	371	53	003081010
Electronic Technician	379	57	003181014
Radio Engineer	381	58	003187050

The job titles in this occupational family contribute to the function of producing messages to be distributed—operate telecommunications equipment necessary to assemble and produce messages—via the Broadcast and Line communications (telecommunications) message distribution systems.

Most of these job titles require a minimum of two years of post-high school education or technical school training. Few require less than a high school education and most of the "engineer" job titles require a college degree or its equivalent. About two out of three of these job titles have training and experience requirements of two to four years while some require more than four and up to ten years to qualify for these positions. For specific information on any job title refer to the GED and SVP levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 287 (AEL WTG 28)	DOT #
Morse Operator	236588010
Telautograph Operator	208588022

WTG Page 312 (AEL WTG 37)	DOT #
Communication Engineer	822281022
Light Technician	962381010

WTG Page 371 (AEL WTG 53)	DOT #
Electronic Engineer	003081034
Radio Engineer	003081070

WTG Page 379 (AEL WTG 57)	DOT #
Sound-Effects Man	194281010

WTG Page 381 (AEL WTG 58)	DOT #
Commercial Engineer	003187014
Transmission Engineer	003187062

WTG Page 435 (AEL WTG 82)	**DOT #**
Microphone Operator	963782010
Recording-Machine Operator	194782014
Videotape-Recording Engineer	194782022

WTG Page 514 (AEL WTG 108)	**DOT #**
Teleprompter Operator	963382010
Video-Recording Engineer	963382014

WTG Page 516 (AEL WTG 109)	**DOT #**
Audio Operator	957282010
Control-Room Man	957382010
Control-Room Technician	957282014
Field Engineer	193282018
Master-Control Engineer	957282018
Photoradio Operator	193382010
Radiotelegraph Operator	193282934
Radiotelephone Operator	193282038
Sound Mixer	194282014
Telecine Operator	957382014
Transmitter Operator	957282022
Video Operator	957282026

Occupational Family: SUPERVISORS (K)

WTG Pages: 228, 237, 241, 243, 245, 261, 276, 299, 305, 335, 375, 394
(AEL WTG 2, 6, 8, 9, 10, 17, 24, 33, 34, 41, 55, 64)

The occupational family, SUPERVISORS (K), offers employment opportunity in the Broadcast, Graphic, and Line communications occupational areas. The primary occupations — high employment potential job titles — are:

DOT Job Title	WTG Page	AEL WTG	DOT #
Manager, Circulation	237	6	163118010
Manager, Station	237	6	184118050
Central-Office-Operator Supervisor	243	9	235138010
Telephone Operator Chief	243	9	235138014
Manager, Advertising	245	10	163168014
Foreman, Printing Shop	299	33	659130010
Repairman Foreman	299	33	822131018

The job titles in this occupational family represent the supervisory — organization/management — function that exists within the CMO cluster. These job titles require the skills necessary to effectively work with people, to plan and direct the work activities to be carried out by other workers, as well as those skills and knowledge necessary to use the technology required by that message distribution system. Entry into a supervisory position is generally based upon having demonstrated the skills and knowledge required of the workers to be supervised.

All of the job titles in this occupational family require at least high school graduation or its GED equivalent. Slightly more than half require two years of post-high school education or training. The combination of training and experience required for these job titles ranges from one to ten years. For specific information on any job title refer to the GED and SVP levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 228 (AEL WTG 2)	**DOT #**
Director, Art	141031014

WTG Page 237 (AEL WTG 6)	**DOT #**
Director, Advertising	164118010
Director, International Broadcasting	184118010
Director, Public Service	184118014
Operations Manager	184118058
Producer	159118010
Revenue-Settlements Administrator	184118062
Superintendent, Communications	184118070

WTG Page 241 (AEL WTG 8)	**DOT #**
Contract-Clerk Training Supervisor	239228010

WTG Page 243 (AEL WTG 9)	DOT #
Cable Supervisor	239138010
Chief Clerk, Print Shop	207138010
Contract-Clerk Supervisor	239138014
Foreman, Mailroom	239138018
Manager, Delivery Department	239138022
Morse Supervisor	239138030
Production Supervisor	979138010
Service Observer Chief	239138034
Solicitor, Head	249138014
Supervising Film Editor	962138022
Supervisor, Automatic Equipment	239138038
Supervisor, Computer Operations	213138010
Supervisor, Force Adjustment	205138014
Supervisor, Machine-Records Unit	213138014
Supervisor, Messengers	230138010
Supervisor, Route	239138042
Telefax Supervisor	239138046
Telegraphic-Typewriter Operator Chief	203138010

WTG Page 245 (AEL WTG 10)	DOT #
Administrative Secretary	169168018
Announcer Supervisor	159168010
Cable Foreman, Supervising	184168010
Director	159168018
Director, Broadcast I	184168030
Director, International Programs	184168034
Director, Operations	184168014
Director, Operations, Broadcast	184168018
Director, Program	159168022
Director, Program	184168022
Director, Sports	184168026
Field Supervisor, Broadcast	193168038
Manager, Copyright	169168054
Manager, Telegraph Office	184168082
Manager, Traffic	184168110
Manager, Traffic I	184168102
Manager, Traffic II	184168106
Musical Program Director	152168010
Production Chief	184168126
Production Manager, Advertising	141168010
Production Chief, International Broadcast	184168130
Production Man, International Broadcast	159168026
Regulatory Administrator	168168074
Stations-Relations-Contract Representative	184168142
Superintendent, Station	184168206
Testing-and-Regulating Chief	184168258
Traffic Chief, Radio Communications	184168262
Television-Film Field Coordinator	143168010

WTG Page 261 (AEL WTG 17)	**DOT #**
Control Supervisor, Junior	193168030
Control Supervisor, Senior	193168034
Production Man	963168014
Program Assistant	963168018
Special-Events Man	963168022

WTG Page 276 (AEL WTG 24)	**DOT #**
Program-Transmission Supervisor	957388010

WTG Page 299 (AEL WTG 33)	**DOT #**
Blueprinting-and-Photocopy Supervisor	979130010
Cable Foreman	829131010
Central-Office-Repairman Supervisor	822131010
Finishing-Room Foreman	979137010
Foreman, Bindery	653131010
Foreman, Electrical-Repair and Telephone-Line Maintenance	829131018
Foreman, Press Room	651130010
Instrument-Shop Supervisor	722131010
Line Foreman	822131014
Photographic Foreman	976131018
Test-Desk Supervisor	822131026

WTG Page 305 (AEL WTG 34)	**DOT #**
Control-Room Technician Supervisor	957138010
Foreman, Composing-Room	973138010
Production Manager, Reproduction	652138014
Rigger Foreman	823138010
Supervisor, Costumes	969138010

WTG Page 335 (AEL WTG 41)	**DOT #**
Private-Branch-Exchange Service Advisor	235228010

WTG Page 375 (AEL WTG 55)	**DOT #**
Director, Technical	963168010
Manager, Sound Effects	194168010

WTG Page 394 (AEL WTG 64)	**DOT #**
Director, Music	152043018
Director, Music, International Broadcasting	152048022

Occupational Family: SALES-SERVICE REPRESENTATIVES (M)

BROADCAST
GRAPHIC
LINE

WTG Pages: 276, 280, 360, 371, 373, 486, 488, 501
(AEL WTG 24, 26, 52, 53, 54, 96, 97, 102)

The occupational family, SALES-SERVICE REPRESENTATIVES (M), offers employment opportunity in the Broadcast, Graphic, and Line communications occupational areas. The primary occupations—high employment potential job titles—are:

DOT Job Title	WTG Page	AEL WTG	DOT #
Circulation Clerk	280	26	209488010
Salesman, Advertising	488	97	258358010
Salesman, Printing	488	97	258358014
Salesman, Radio & Television Time	488	97	253358010
Sales Representative, Telephone Services	488	97	257258014

This occupational family represents the distribution function of the world of work as it exists within the CMO cluster. The job titles included involve sales activities in relation to the services provided by a message distribution system. Also included are job titles that service the needs of established customers, e.g., recording receipts of payments for services rendered.

Most of these job titles require a high school education. Employers indicate a need for increasing the level of education, and in particular, the level of technical knowledge of sales-service representatives in all communications media occupational areas. These job titles commonly require completion of a minimum of one or two years of post-high school education or technical training with completion of the four-year college degree becoming more common for the person seeking positions providing higher level income potential. For specific information on any job title refer to the GED and SVP levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 276 (AEL WTG 24)	DOT #
Estimator	219388118
Sales Development Clerk	219388242
Television-Schedule Coordinator	199388014

WTG Page 280 (AEL WTG 26)	DOT #
Clerk, Cable Transfer	219388062
Toll Rating Clerk	219488066

WTG Page 360 (AEL WTG 52)	DOT #
Collector	240887010

WTG Page 371 (AEL WTG 53)	DOT #
Telecommunications-Service Engineer	003081090

WTG Page 373 (AEL WTG 54)	DOT #
Special-Service Representative	003151014

WTG Page 486 (AEL WTG 96)	DOT #
Electronic-Sales-and-Service Technician	828251010

WTG Page 488 (AEL WTG 97)	DOT #
Representative, Personal Service	257258010
Salesman, Art	258258010
Salesman, Public Utilities	257358010
Salesman, Signs	258358018
Salesman, Signs & Displays	258258014
Salesman, Television Cable Service	259358018

WTG Page 501 (AEL WTG 102)	DOT #
Serviceman, Electrotype	659468010

Occupational Family: TELECOMMUNICATIONS "INSTALLERS" (N)

BROADCAST LINE

WTG Pages: 261, 265, 271, 312, 319, 322, 360, 371, 381, 420
(AEL WTG 17, 19, 22, 37, 38, 39, 52, 53, 58, 76)

The occupational family, TELECOMMUNICATIONS "INSTALLERS" (N), offers employment opportunity in the Broadcast and Line communications occupational areas: The primary occupations—high employment potential job titles—are:

DOT Job Title	WTG Page	AEL WTG	DOT #
Cable Splicer	312	37	829381010
Central-Office Repairman	312	37	822281014
Combination Man	312	37	822281018
Installer Repairman	312	37	822281038
Lineman	312	37	822381026
Station Installer	312	37	822381050
Television Service & Repairman	312	37	720281018
Telephone Engineer	371	53	003081098

The job titles in this occupational family involve the installation and/or maintenance (on-site) of the equipment necessary to the function of Broadcast and Line communications (telecommunications) distribution systems. This occupational family is one of two within the CMO cluster representing the technical service (support) function of the world of work. This equipment commonly places heavy emphasis upon applications of electronics principles of theory.

Most of these job titles require high school graduation or its equivalent and some additional post-high school training—technical school or on-the-job. The engineering job titles will commonly require a college degree. Training and experience requirements for these job titles varies from as little as one to three months up to ten years. For specific information on any job title refer to the GED and SVP levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 261 (AEL WTG 17)	DOT #
Dispatcher	957168010

WTG Page 265 (AEL WTG 19)	DOT #
Assignment Clerk	957368010

WTG Page 271 (AEL WTG 22)	DOT #
Facilityman	959387010

WTG Page 312 (AEL WTG 37)	DOT #
Audio-Video Repairman	729281010
Automatic-Equipment Technician	822281010
Cable Repairman	822381010
Cable-Splicer Apprentice	829381014
Cable Tester	822381014
Central-Office Installer	822381018
Communication Man	822281026
Electrician, Office	822281030

Electrician, Radio	823281014
Electronics Mechanic	828281022
Electronics Mechanic Apprentice	828281026
Equipment Inspector	822281034
Equipment Installer	822381022
Instrument Shopman	722281018
Lineman	821281010
Lineman, Section	822381030
Maintenance Inspector	822281042
Mechanician, Submarine Cable Equipment	822281046
Private-Branch-Exchange Installer	822381034
Private-Branch-Exchange-Installer Apprentice	822381038
Private-Branch-Exchange Repairman	822281050
Radio Communications Equipment Installer-Serviceman	823281026
Radio Mechanic	823281030
Radio Repairman	720281010
Rigger	823281038
Sound Technician	829281042
Station Repairman	822281058
Submarine-Cable-Station Technician	822281062
Tape-Recorder Repairman	720281014
Telegraph-Plant Maintainer	822381054
Telephone Inspector	822381058
Television-Cable Lineman	821281022
Television Service & Repairman Apprentice	720281022
Test Deskman	822381062
Testing-and-Regulating Technician	822281066
Transmission Man	822381066

WTG Page 319 (AEL WTG 38)	**DOT #**
Television-Installation Man	823781010

WTG Page 322 (AEL WTG 39)	**DOT #**
Antenna Installer	823884010
Audimeter Installer & Serviceman	726884014
Cable Man	822884010
Frameman	822884014
Plant Wireman	822884018
Radio-Mechanic Helper	823884014

WTG Page 360 (AEL WTG 52)	**DOT #**
Cable-Splicer Helper	829887010

WTG Page 371 (AEL WTG 53)	**DOT #**
Equipment Engineer	003081042
Line-Construction Engineer	003081058
Telegraph Engineer	003081094

WTG Page 381 (AEL WTG 58)	**DOT #**
Cable Engineer	003187010
Transmission-and-Protection Engineer	003187070

WTG Page 420 (AEL WTG 78)	**DOT #**
Line Inspector	822287010

Occupational Family: GRAPHIC EQUIPMENT "INSTALLERS" (P)

WTG Page: 312 (AEL WTG 37)

The occupational family, GRAPHIC EQUIPMENT "INSTALLERS" (P), offers employment opportunity in the Graphic communications occupational area. The primary occupation — high employment potential job title — is:

DOT Job Title	WTG Page	AEL WTG	DOT #
Press-Maintenance Man................	312	37	627281026

The job titles in this occupational family involve the installation and "on-site" maintenance of Graphic communications equipment. This occupational family is one of two within the CMO cluster representing the technical service (support) function of the world of work. The job titles generally involve electro-mechanical knowledge and skills, plus experiences with the equipment commonly used in a production technology, e.g., letterpress, lithographic, rotogravure, etc. Graduation from high school is commonly required by these job titles, as well as from one or two years up to ten years of experience.

The emerging trend in Graphic communications technology indicates that persons in this occupational family face the need to develop additional skills and knowledge in electronics. For specific information on any job title refer to the GED and SVF levels of education, training, and experience provided in the alphabetical list of CMO job titles.

Other CMO job titles in this occupational family are found on:

WTG Page 312 (AEL WTG 37)	DOT #
Composing-Room Machinist	627281010
Machinist Apprentice, Composing-Room........................	627281014
Machinist Apprentice, Linotype..............................	627281018
Machinist, Linotype...	627281022
Neon-Sign Serviceman	824281022
Sign Erector I	869381022

WORKER TRAITS AND ABILITIES

On the following pages, general worker traits and abilities have been identified. The lists are general — not related to a specific job. They are organized by CMO occupational families. They are relevant to many jobs and do not require technical training. These traits and abilities can be developed through a wide variety of experiences, in and out of school, and at all age levels.

The identification indicates the indirect relationship many courses have with occupational exploration and preparation. For example, the ability emphasized most frequently is **finger-hand dexterity**. While usually not considered occupational preparation, courses such as arts and crafts can contribute to the development of this skill. Possibly even more important, these classes can give students an opportunity to explore and gain further insight into their abilities and interests. This experience can develop broader perspective into possible occupational options.

PHOTOGRAPHERS

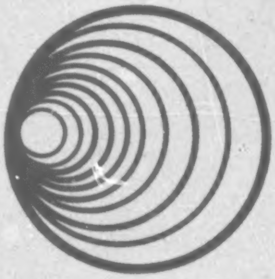
- Use visual imagination — e.g., plan and see a picture before it is taken.
- Artistic perception — e.g., sense what will make an attractive picture.
- Coordinate eyes and hands to use hands and fingers skillfully — e.g., ability to maneuver and manipulate photographic equipment.
- Work with people to gain their cooperation — e.g., to get people's cooperation in either getting a photograph taken or to photograph them.

ILLUSTRATORS

- Recognize and appreciate beauty — aesthetic appreciation.
- Use creative imagination — e.g., create new designs.
- Apply artistic perception and judgment in terms of harmony, color, line, shape, size, texture and spatial relationships involving form and line.
- Coordinate eyes and hands to use hands and fingers skillfully — e.g., use brushes, pens and hand tools for painting, drawing and cutting.
- Plan sequences of operation — e.g., for selecting tools and materials.
- Assume responsibility for attainment of prescribed qualitative standards.
- Work with detail.

CORRESPONDENTS

- Maintain accuracy and attention to detail.
- Follow instructions or established procedures -- e.g., procedures for classifying information.
- Learn to use terminology and concepts when working in a technical field.
- Visualize spatial relationships.
- Memorize details.
- Use analysis and logic when organizing material (information, data) — i.e., identify important facts from masses of material and organize them for more effective presentation.
- Use a pleasant speaking voice with good diction, sense of rhythm and euphony.
- Use words skillfully.
- Use lucid self-expression through speaking and writing
- Use originality, inventiveness and be at ease when speaking extemporaneously.
- Relate to both seen and unseen audiences — e.g., instill confidence and persuade.
- Persuade — e.g., deal with people in competitive situations.
- Be self-confident and use initiative.
- Deal with problems involving persistent frustration —perseverance.
- Use creativity and imagination — i.e., develop workable solutions to unusual problems and develop new approaches.
- Take responsibility and make decisions.
- Organize own work and work of subordinates.
- Understand the problems and feelings of people.



TELEPHONE OPERATORS

- Use tact and courtesy.
- Deal effectively with people.
- Use a pleasant speaking voice.
- Use words fluently and listen carefully.
- Coordinate eyes and hands to use hands and fingers quickly and accurately.
- Adjust to doing the same type of work over and over.

MESSAGE ASSEMBLERS

- Get needed information from people and make a good impression on others when answering questions.
- Enjoy public contact, when part of the job.
- Read with comprehension.
- Be exact and pay attention to detail — e.g., avoid errors when working with critical data such as numbers and facts.
- Willingly follow instructions closely.
- Perform organized routine work day after day without getting bored.
- Coordinate eyes and hands to work quickly and accurately with hands and fingers when using machines.
- Enjoy using machines.
- Work neatly.
- Learn to apply craft methods, skills, processes and principles.
- Use independent judgment, when the task calls for it, to plan operational sequences and select the proper tools and materials.
- Take responsibility for doing quality work according to established standards.
- Solve arithmetic problems — e.g., shop mathematics such as computing dimensions and locating reference points from specifications when laying out work.
- Use form and spatial perception — e.g., visualize the relationship of stable or moving parts and distinguish small differences in shapes, space, sizes and textures.

IMAGE CARRIER PREPARERS

- Learn and apply craft skills, methods, processes and principles.
- Use self-judgment to plan steps for performing task and operations to select proper tools and materials.
- Take responsibility for doing quality work according to established standards.
- Apply shop mathematics to practical problems — e.g., computing dimensions and locating reference points from specification data when laying out work.
- Imagine how a design would look when completed according to specifications.
- Determine fine differences in shapes, sizes and textures.
- Coordinate eyes and hands to use fingers and hands to skillfully use hand tools and manually controlled power tools.

IMAGE TRANSFERRERS

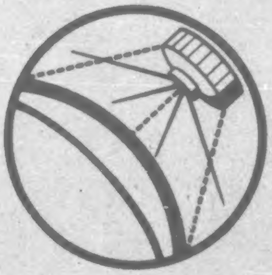
- Learn and apply craft skills and methods, processes and principles.
- Use self-judgment to plan steps in performing tasks and operations and to select proper tools and materials.
- Take responsibility for doing quality work according to established standards.
- Apply shop mathematics to practical problems — e.g., computing dimensions and locating reference points from specification data when laying out work and setting up machinery.
- Use spatial perception to visualize arrangement and relationships of composite, static or moving parts and assemblies.
- Coordinate eyes and hands to use hands and fingers to skillfully use hand tools and manually controlled power tools.
- Understand how machines operate — i.e., mentally visualize how the parts of a machine work together.
- Understand and follow written and spoken instructions.

FINISHERS

- Coordinate eyes and hands to use hands and fingers skillfully.
- Recognize differences in sizes and shapes.
- Work within prescribed standards and specifications.
- Do repetitive work — follow routines.
- Work with machinery and equipment.
- Learn new procedures willingly.
- Follow instructions willingly.
- Pay close and continuous attention to machinery and equipment whenever it is operating.

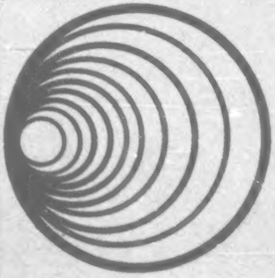
TELECOMMUNICATIONS OPERATORS

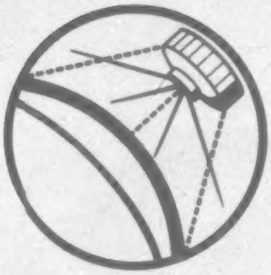
- Learn and apply craft skills and methods, processes and principles.
- Use self-judgment to plan steps in performing tasks and operations and to select proper tools and materials.
- Take responsibility for doing quality work according to established standards.
- Apply mathematics to practical problems in mechanics and electronics.
- See fine differences in shapes, sizes and relationships among parts in a drawing or piece of equipment.
- Imagine how a design would look when completed according to specifications.
- Learn and apply basic engineering and technical rules and methods.
- Use written and spoken language easily and accurately.
- Coordinate eyes and hands to use hands and fingers to skillfully use hand and power tools and manually controlled communications equipment.

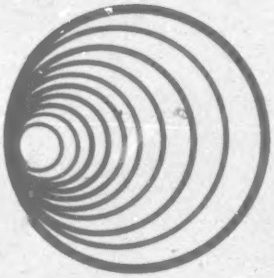


SUPERVISORS

- Develop, organize, start and carry out policies and programs — e.g., organize own work and work of others.
- Analyze problems and develop appropriate solutions.
- Apply guidelines to get work done quickly and effectively.
- Take lead in getting work started an[illegible]pleted successfully.
- Apply administrative concepts and practices to different organizational environments.
- Adjust to new and changing conditions.
- Use words well to deal with people at all levels.
- Relate to people in a way that wins their confidence and establishes rapport — e.g., so workers establish trust and respect and follow directions.
- Plan ahead and make assignments to subordinates in a manner which promotes coordinated action and the completion of individual tasks on time.
- Speak and write effectively so both supervisors and subordinates understand.
- Use numbers easily — e.g., to analyze, prepare and review reports dealing with material and time schedules.
- Detect errors in written material — e.g., tables of figures, price lists, inventories and timetables.
- Perform work done by subordinates and train employees.
- Get people to work well, both by themselves and with others.
- Work with subordinates on difficult jobs.







SALES-SERVICE REPRESENTATIVES

- Use systematic recordkeeping and data-gathering procedures.
- Solve arithmetic problems and correct computational errors.
- Attend sufficiently to details to avoid errors.
- Recognize differences in shapes and sizes.
- Coordinate eyes and hands to use hands and fingers to demonstrate appropriate machine operations rapidly and accurately.
- Use words easily — i.e., speak clearly with adequate vocabulary.
- Learn easily the objects, materials or service involved.
- Start and complete work assignments through self-initiative.
- Deal diplomatically and tactfully with people.
- Persuade others to buy a service or product.

TELECOMMUNICATIONS INSTALLERS

- Learn and apply craft skills, methods and basic engineering processes and principles.
- Use knowledge and imagination to create new things or new ways of doing things.
- Apply clear, organized thinking.
- Devise ways to get work done correctly and on time.
- Use self-judgment to plan steps in performing tasks and operations and to select proper tools and materials.
- Take responsibility for doing quality work according to established standards.
- Apply shop mathematics to practical problems, such as computing dimensions and locating reference points from specification data when laying out work.
- Imagine how a design would look when completed according to specifications.
- Coordinate eyes and hands to use hands and fingers to skillfully use hand tools and manually controlled power tools.
- See details in drawings and designs and recognize fine differences in sizes and shapes.
- Clearly explain details of the job.

GRAPHIC EQUIPMENT INSTALLERS

- Learn and apply craft skills, methods, processes and principles.
- Use self-judgment to plan steps in performing tasks and operations, and to select proper tools and materials.
- Take responsibility for doing quality work according to established standards.
- Apply shop mathematics to practical problems — e.g., computing dimensions and locating reference points from specification data when laying out work.
- Imagine how a design would look when completed according to specifications.
- Determine fine differences in shapes, sizes and textures.
- Coordinate eyes and hands to use hands and fingers to do detailed work skillfully with hand tools and hand-controlled power tools.

FREQUENCY OF GENERAL WORKER TRAITS AND ABILITIES BY CMO OCCUPATIONAL FAMILIES

Traits & Abilities	Number of Occupational Families	PHOTOGRAPHERS (A)	ILLUSTRATORS (B)	CORRESPONDENTS (C)	TELEPHONE "OPERATORS" (D)	MESSAGE "ASSEMBLERS" (E)	IMAGE CARRIER PREPARERS (F)	IMAGE TRANSFERRERS (G)	FINISHERS (H)	TELECOMMUNICATIONS "OPERATORS" (J)	SUPERVISORS (K)	SALES-SERVICE REPRESENTATIVES (M)	TELECOMMUNICATIONS "INSTALLERS" (N)	GRAPHIC EQUIPMENT "INSTALLERS" (P)
Coordinate eyes and hands	11	X	X		X	X	X	X	X	X		X	X	X
Finger-hand dexterity	11	X	X		X	X	X	X	X	X		X	X	X
Assume responsibility for attaining standards	8		X	X		X	X	X		X			X	X
Plan sequences of operation, tools and materials	7		X			X	X	X		X			X	X
Visualize spatial relationships	7			X		X	X	X		X			X	X
Solve arithmetic problems and applied mathematics	7					X	X	X		X		X	X	X
Discern fine differences in shape, sizes and texture	6						X		X	X		X	X	X
Apply craft method, skills, process and principles	6					X	X	X		X			X	X
Gain people's cooperation	4	X			X	X					X			
Follow instructions or established procedure	4			X		X		X	X					
Express self through speaking and writing	4			X						X	X		X	
Use words skillfully	4			X	X						X	X		
Creative imagination	3		X	X									X	
Maintain accuracy	3			X					X			X		
Use initiative	3			X							X	X		
Organize own and work of others	3			X							X		X	
Do repetitive work without stress	3				X	X			X					
Work with detail	2			X		X								
Learn to use technical terminology or objects and materials	2			X								X		

FREQUENCY OF GENERAL WORKER TRAITS AND ABILITIES BY CMO OCCUPATIONAL FAMILIES (CONTD)

Traits & Abilities	No./ Occ. Fam.	A	B	C	D	E	F	G	H	J	K	M	N	P
Organize data using analysis and logic	2			X								X		
Locate and solve problems	2										X		X	
Persuade	2			X								X		
Use tact, courtesy and diplomacy	2				X							X		
Use pleasant speaking voice	2			X	X									
Enjoy using machines	2					X			X					
Apply artistic perception and judgment	2	X	X											
Visual imagination	1	X												
Recognize and appreciate beauty	1		X											
Memorize detail	1			X										
Speak extemporaneously	1											X		
Persevere in frustrating situations	1			X										
Make decisions	1			X										
Understand problems and feelings of people	1			X										
Enjoy meeting people	1					X								
Listen carefully	1				X									
Read with comprehension	1					X								
Work neatly	1					X								
Understand how machines operate	1							X						
Give continuous attention to operating machines	1								X					
Enjoy learning new procedures	1								X					
Adjust to new and changing conditions	1										X			
Learn and apply basic organizing and technical rules	1									X				
Use numerical data easily	1										X			
Apply administrative concepts	1										X			
Train employees	1										X			
Work with subordinates	1										X			

A FORMAT FOR DETERMINING RELEVANT JOB INFORMATION

This section on job titles utilizes a multi-purpose format that can be used by students and teachers in determining, by filling in (or checking off), relevant job information applied to any specific job being investigated.

This approach has a number of potential uses. Learners can explore jobs and prepare their own job analysis before going out to observe. Other learners, about to spend several days in exploratory work experiences, can prepare or receive from the teacher the occupational analysis in the form of a checklist so they can mark off those duties they observe and those they perform. Other students can take the occupational analysis to interviews with actual job holders and use the analysis as a base as they develop an occupational analysis of jobs performed locally. Teachers can use the occupational analysis as the basis for developing a training plan for each student on supervised work experience.

One job only, on the following pages, has been ruled with this multi-purpose format, although all other jobs listed and identified for investigation at the career orientation and exploration phases of instruction can be quickly adapted to this format.

WORKER FUNCTIONS AND JOB DUTIES OF CMO HIGH EMPLOYMENT POTENTIAL OCCUPATIONS

DOT JOB TITLE: Enter DOT title and DOT number here.
(Place synonyms here in parentheses.)

MAJOR JOB FUNCTION:

INSTRUCTIONS:

This space can be used for instructions about how to respond in the columns, to the right, and how to respond to job duties, add to them, etc.

JOB DUTIES:

Job duties can be developed from existing lists; the DOT, Volume I; or persons with first hand knowledge of the job such as supervisors, performers and observers; or a combination of these sources. For example, a list can be generated from the DOT, then items can be added when the analyzer watches actual job incumbents.

These columns can be added to or reduced according to needs. The column can be used in a variety of ways; e.g., to record for each task its importance, time actually spent on it, whether it is an entry level requirement, whether best learned on the job or in a special school, frequently, importance, learning difficulty, or type of performance.

DOT JOB TITLE: Advertising Lay-Out Man 141081010
(Advertising designer; comprehensive artist; visualizer)

MAJOR JOB FUNCTION: Designs advertising layouts for newspaper, magazine, television, poster, direct mail and billboard advertisements.

INSTRUCTIONS:

JOB DUTIES:

1. Studies illustrations and photographs submitted by client, or sketches illustrations following client's specifications, to plan designed layout.
2. Paints or draws comprehensive (sample of finished advertisement) for approval of client or other advertising personnel.
3. Arranges drawings and photographs in well-balanced artistic layout.
4. Decides physical arrangement of and size and style of type to be used for printed copy.
5. Suggests additions to or changes in advertising copy and design in final layout to improve presentation.

DOT JOB TITLE: Announcer 159148010

MAJOR JOB FUNCTION: Introduces various types of radio or television programs and interviews guests.

INSTRUCTIONS:

JOB DUTIES:

1. Reads news flashes.
2. Identifies station by giving call letters.
3. Gives necessary network cues to Control-Room Man so that selected stations connected by telephone lines may receive intended programs.
4. Describes public events such as parades and conventions, speaking extemporaneously.
5. Operates control board and recording machines.
6. Sells time.
7. Writes script and news copy.
8. Keeps records of programs in which he participates.
9. Reads advertising copy at specified times during broadcast.

DOT JOB TITLE: Art Lay-Out Man 141081014 (Artist)

MAJOR JOB FUNCTION: Plans and arranges art layouts, using sketches, pictures or diagrams to illustrate news events and feature articles in newspapers or periodicals.

INSTRUCTIONS:

JOB DUTIES:

1. Examines photographs, other illustrative materials and instructions regarding space allotment to determine most effective layout to illustrate news event or feature article.
2. Trims pictures and drawings to fit space positions and pastes them in well-balanced artistic arrangement on background.
3. Draws or paints borders around illustrations.
4. Retouches photographs with ink and brush.
5. Draws arrows and circles on photographs to identify figures or points of interest.
6. Sketches maps and other illustrations.

DOT JOB TITLE: Audio Engineer 003081010
(Acoustical engineer; sound engineer)

MAJOR JOB FUNCTION: Designs and develops electronic equipment for transmission of sound in studio broadcasting.

INSTRUCTIONS:

JOB DUTIES:

1. Designs test apparatus.
2. Devises procedures to evaluate audio-electronic equipment.
3. Directs field operation and maintenance of audio equipment.
4. Recommends design changes of audio equipment according to operational evaluation to correct errors or to accommodate changes in system requirements.

DOT JOB TITLE: Bindery Worker 643885010
(Bindery man or girl; bindery operator; table worker)

MAJOR JOB FUNCTION: Tends one or more of the following machines and performs any combination of the following duties involved in binding books, magazines, pamphlets, directories and catalogs.

INSTRUCTIONS:

JOB DUTIES:

1. Punches holes in paper sheets using gang-punch press.
2. Stamps numbers on sheets by hand or machine.
3. Creases and compresses signatures prior to affixing covers, using handpress.
4. Fastens sheets or signatures together, using hand or machine stapler, or tends machine that inserts wire or plastic binding strips into punched holes to fasten pages and covers together.
5. Feeds covers, signatures and sheets into various machines for stitching, folding, ruling, roughing, indexing and gluing operations.
6. Removes, stacks and packs printed material in various stages of completion as it accumulates on delivery table of machines.
7. Examines stitched or bound books and magazines to ascertain that pages or signatures are bound in numerical or folio order according to sample copy, and for such defects as imperfect bindings, ink spots and torn, loose and uneven pages.
8. Inserts illustrated pages or extra sheets into catalogs or directories by machine.
9. Places paper jackets on acceptable books.
10. Applies goldleaf, silver leaf or metallic foil on book covers.
11. Stamps designs or lettering on covers, using stamping machine.

DOT JOB TITLE: Cable Splicer 829381010
(Cable repairman; electrician, cable-splicing; splicer)

MAJOR JOB FUNCTION: Splices overhead, underground or submarine multiple-conductor cables used in telephone and telegraph communications.

INSTRUCTIONS:

JOB DUTIES:

1. Climbs utility poles or towers, or descends into sewers and underground vaults where cables are located.
2. Cuts lead sheath from installed cable to give access to defective cable connections, using hacksaw.
3. Cuts and peels lead sheath and insulation from newly installed cables and conductors preparatory to splicing.
4. Tests (traces or phases out) each conductor to identify corresponding conductors in adjoining cable sections, according to electrical diagrams and specifications, to prevent incorrect connections between individual communication circuits using test lamp or bell system.
5. Cleans, tins and splices corresponding conductors by twisting ends together or by joining ends with metal clips, depending upon sizes and function of conductors and solders each connection.
6. Covers conductors and conductor-bundles with insulating materials.
7. Fits lead sleeve around cable joint and wipes molten lead into joints between sleeve and cable sheath to produce moisture-proof joint.
8. Fills completed sleeve with insulating oil.

DOT JOB TITLE: Central-Office Operator 235862010
(Switchboard operator; telephone operator)

MAJOR JOB FUNCTION: Operates telephone switchboard to establish or assist customers in establishing local or long-distance telephone connections.

INSTRUCTIONS:

JOB DUTIES:

1. Observes signal light on switchboard.
2. Plugs cords into trunk jack.
3. Dials or presses button to make connections.
4. Inserts tickets in calculagraph (time stamping device) to record time of toll calls.
5. Consults charts to determine charges for pay-telephone calls.
6. Requests coin deposits for pay-telephone calls.
7. Gives information regarding subscriber's telephone numbers.
8. Calculates and quotes charges on long-distance calls.
9. Makes long distance connections.

DOT JOB TITLE: Central-Office Operator Supervisor 235138010

MAJOR JOB FUNCTION: Supervises and coordinates activities of Central-Office Operators engaged in operating telephone switchboards.

INSTRUCTIONS:

JOB DUTIES:

1. Conducts on-the-job training for inexperienced operators.
2. Assists operators in placing unusual types of calls.
3. Discusses service problems directly with customers.
4. Determines work procedures.
5. Issues written and oral orders or instructions.
6. Assigns duties to workers.
7. Examines work for exactness and neatness.
8. Prepares composite reports from individual reports of subordinates.
9. Maintains harmony among workers.
10. Adjusts errors and complaints.
11. Keeps time reports and other personnel records.
12. Employs operators.
13. Discharges operators.

DOT JOB TITLE: Central-Office Repairman 822281014
(Central-office maintainer; switchman)

MAJOR JOB FUNCTION: Tests, analyzes defects and repairs telephone defects; repairs telephone circuits and equipment in central office of telephone company, using meters and handtools.

INSTRUCTIONS:

JOB DUTIES:

1. Locates electrical and mechanical failures in telephone switching equipment, using meters, such as voltmeter, resistance meter, watt-meter and capacity meter.
2. Installs, repairs and adjusts equipment, such as switches, relays and amplifiers, using handtools.
3. Removes connections on wire distributing frames and solders wires to terminal lugs following diagrams.

DOT JOB TITLE: Circulation Clerk 209488010
(Subscription clerk)

MAJOR JOB FUNCTION: Compiles records concerned with city or mail-order distribution of newspapers or magazines to subscribers, carriers or dealers and adjusts complaints.

INSTRUCTIONS:

JOB DUTIES:

1. Examines delivery tickets and records number of newspapers or magazines delivered to each city carrier or dealer.
2. Types changes and corrections in names of addresses of subscribers, carriers and dealers on distribution lists.
3. Writes or types for mail-order subscriptions and forwards them to customers.
4. Examines subscriptions date file and sends letters to solicit renewal of expiring subscriptions.
5. Receives telephoned and written complaints from subscribers and notifies distributor.
6. Sells back copies of publications as requested.

DOT JOB TITLE: Classified Ad Clerk 209388018
(Clerk, classified)

MAJOR JOB FUNCTION: Examines and marks classified advertisements of newspaper according to copy sheet specifications to guide composing room in assembling type.

INSTRUCTIONS:

JOB DUTIES:

1. Marks advertisements that have expired and indicates number of days others are to continue, using classified file copy and copy sheet for current day.
2. Computes and records total number of lines for new advertisements.

DOT JOB TITLE: Combination Man 822281018
(Section maintainer)

MAJOR JOB FUNCTION: Performs installation and repair work on telephone and telegraph equipment in small communities or rural areas, doing general line maintenance and repairing central-office equipment at small exchanges.

INSTRUCTIONS:

JOB DUTIES:

1. Inspects subscriber's premises to determine installation method.
2. Climbs poles to attach outside wires.
3. Connects telephone cable terminals with inside wires using drop (outside) wire and clamps.
4. Assembles equipment on premises and installs related inside wiring using handtools and following installation diagrams and standard instructions.
5. Tests installation to insure that it functions properly.
6. Tests telephone and wires, using test telephone, tone and flicker sets.
7. Repairs, adjusts or replaces faulty equipment, using electricians' handtools and following installation diagrams and standardized instructions.
8. Climbs poles and crawls under houses to replace and rearrange faulty wiring.
9. Ascends poles or enters tunnels and sewers.
10. Cuts in feeder lines.
11. Attaches appliances, such as terminal boxes and repeaters.
12. Repairs or replaces defective lines and auxiliary equipment.

13. Unreels and strings lines from pole to pole and from pole to building.
14. Installs hardware, such as conduits and insulators.
15. Attaches appliances on lines.
16. Pulls lines through ducts by hand or by use of winch.
17. Locates electrical and mechanical failures in telephone switching equipment, using meters, such as voltmeter, resistance meter, watt-meter and capacity meter.
18. Installs, repairs and adjusts equipment, such as switches, relays and amplifiers, using handtools.
19. Removes connections on wire distributing frames and solders wire to terminal lugs following diagrams.

DOT JOB TITLE: Contract Clerk 249368018
(Adjustment clerk; application clerk; order clerk; outside contact clerk; service representative)

MAJOR JOB FUNCTION: Interviews applicants for telephone service.

INSTRUCTIONS:

JOB DUTIES:

1. Talks with customers by phone or in person and receives orders for installation, discontinuance or change in services.
2. Fills out contract forms.
3. Determines charges for main extensions.
4. Collects deposits.
5. Prepares change of address records.
6. Issues discontinuance orders.
7. Solicits sale of new or additional services.
8. Adjusts complaints concerning billing or service rendered.
9. Refers complaints of service failures to designated departments for investigation.
10. Visits customers at their place of residence to investigate conditions preventing completion of service — connection orders and to obtain contract and deposit when service is being used without contract.

DOT JOB TITLE: Copywriter 132088010
(Advertising-copy writer; ad writer)

MAJOR JOB FUNCTION: Prepare advertising copy.

INSTRUCTIONS:

JOB DUTIES:

1. Consults with Account Executive and media and marketing representative to obtain information about product or service and to discuss style and length of advertising copy.
2. Considers budget and media limitations.
3. Writes original copy for newspapers, magazines, billboards and transportation advertising.
4. Writes scripts for radio and television advertising.
5. Presents copy to account executive for client's approval.

DOT JOB TITLE: Correspondent 132268010
(Newspaper correspondent)

MAJOR JOB FUNCTION: Report stories, articles and news items by mail, telephone, radio or telegraph from rural areas, state or national capitals, foreign countries or other locations distant from publishing establishment or broadcasting station.

INSTRUCTIONS:

JOB DUTIES:

1. Reports to scene or beat of special assignment, as directed.
2. Interviews persons and observes events to obtain and verify story facts, and to develop leads for future news items.
3. Takes notes and reads publicity releases, copies of speeches or similar materials to facilitate organization and writing of story.
4. Types or writes story, referring to reference books, newspaper files or other authoritative sources to secure additional relevant fact that may influence viewpoint of story.
5. Refers stories to supervising editor for approval.
6. Receives and evaluates news tips and suggestions for future stories.
7. Monitors police and fire radio communications to obtain news story leads.

DOT JOB TITLE: Disk Jockey 159148022

MAJOR JOB FUNCTION: Announces program of musical recordings commenting on the music and other matters of interest to audience and public service announcements.

INSTRUCTIONS:

JOB DUTIES:

1. Reads news flashes.
2. Identifies station by giving call numbers.
3. Operates control board.
4. Operates recording machines.
5. Keeps records of programs in which participates.
6. Reports weather.
7. Gives time of day.
8. Comments on traffic conditions.
9. Reads public service announcements.

DOT JOB TITLE: Editor, Department 132038014
(Editor, feature)

MAJOR JOB FUNCTION: Coordinates activities of newspaper news or feature department and supervises reporters engaged in gathering, writing and publishing one specific type of news, such as drama, music or society.

INSTRUCTIONS:

JOB DUTIES:

1. Assigns reporters to obtain news coverage of important events and newsworthy personalities.
2. Edits copy prepared by reporters in accordance with accepted rules of style and syntax.
3. Attends events, such as club meetings, movies, exhibits or musical performance, to obtain news items for news stories, columns or reviews.
4. Interviews personalities to secure information for feature articles.
5. Edits copy.
6. Writes headlines.
7. Plans layout of news items in assigned newspaper section.

DOT JOB TITLE: Editor, Newspaper 132018014
(Editor-in-chief, newspaper)

MAJOR JOB FUNCTION: Directs editorial activities of newspaper and negotiates with production, advertising and circulation department heads, either as owner or owner's representative.

INSTRUCTIONS:

JOB DUTIES:

1. Appoints editorial heads and supervises work of their department in accordance with newspaper policy.
2. Writes leading or policy editorials or notifies Editor, Editorial Page of position to be taken on specific public issues.
3. Confers with editorial policy committee and negotiates with production, circulation and advertising department heads to establish policies and reach decisions affecting publication.
4. Represents publication at professional and community functions.
5. Performs duties of one or more subordinate editors, when necessary.
6. Directs activities of advertising, circulation or production personnel.

DOT JOB TITLE: Electronic Technician 003181014

MAJOR JOB FUNCTION: Applies electronic theory, principles of electrical circuits, electrical testing procedures, engineering mathematics, physics and related subjects to layout, build, test, troubleshoot, repair and modify developmental and production electronic equipment.

INSTRUCTIONS:

JOB DUTIES:

1. Discusses layout and assembly problem with Electronic Engineer.
2. Draws sketches to clarify design details and functional criteria of electronic units.
3. Assembles experimental circuitry (breadboard) or complete prototype model according to engineering instructions, technical manuals and knowledge of electronic systems and components and their functions.
4. Recommends changes in circuitry or installation specifications to simplify assembly and maintenance.
5. Sets up standard test apparatus or contrives test equipment and circuitry and conducts functional, operational, environmental and life tests to evaluate performance and reliability of prototype or production model.
6. Analyzes and interprets data.

7. Adjusts, calibrates, aligns and modifies circuitry and components and records effects on unit performance.
8. Writes technical reports and develops charts, graphs and schematics to describe and illustrate systems operating characteristics, malfunctions, deviations from design specifications and functional limitations for consideration by professional engineering personnel in broader determinations affecting systems design and laboratory procedures.
9. Operates bench lathes, drills and other machine tools to fabricate nonprocurable items such as coils, terminal boards and chassis.
10. May check out newly installed equipment on location to evaluate system performance under actual operating conditions.
11. Instructs and supervises lower grade technical personnel.

DOT JOB TITLE: Field Engineer 829281034
(Field-service representative; field-technical representative; technical representative)

MAJOR JOB FUNCTION: Installs and repairs electronic equipment, such as communication systems in field installations.

INSTRUCTIONS:

JOB DUTIES:

1. Consults with customer to plan lay-out of equipment.
2. Directs workers to install equipment according to manufacturer's specifications.
3. Operates system to demonstrate and train workers in service and repair techniques, using standard test instruments and handtools.
4. Analyzes malfunctions in operational equipment.
5. Interprets maintenance manuals.
6. Uses knowledge of equipment and electronics to train workers in repair procedures.
7. Consults with manufacturer's engineering personnel to determine solutions to unusual problems in system operation and maintenance.
8. Instructs workers in electronic theory.
9. Supervises workers in testing, tuning and adjusting equipment to obtain optimum operating conditions.
10. Installs and maintains equipment, for customers who do not have personnel to perform these duties.

DOT JOB TITLE: Foreman, Printing Shop 659130010
(Printing foreman; shop foreman)

MAJOR JOB FUNCTION: Supervises and coordinates activities of workers engaged in laying out copy, setting type, operating presses and assembling and stitching pamphlets, leaflets and books.

INSTRUCTIONS:

JOB DUTIES:

1. Inspects printing and binding operations to verify conformance to job order specifications.
2. Repairs equipment such as printing presses, type-setting machines, assembling and stitching equipment.
3. Studies production schedules and estimates man-hour requirements for completion of job assignment.
4. Interprets company policy to workers and enforces safety regulations.
5. Interprets specifications and job orders to workers and assigns duties.
6. Establishes or adjusts work procedures to meet production schedules, using knowledge of capacities of machines and equipment.
7. Recommends measures to improve production methods, equipment performance and quality of product.
8. Suggests changes in working conditions and use of equipment to increase efficiency of shop, department or work crew.
9. Analyzes and resolves work problems, or assists workers in solving work problems.
10. Initiates or suggests plans to motivate workers to achieve work goals.
11. Recommends or initiates personnel actions, such as promotions, transfers, discharges and disciplinary measures.
12. Trains new workers.
13. Maintains time and production records.
14. Estimates, requisitions and inspects materials.
15. Confers with other foremen to coordinate activities of individual departments.
16. Confers with workers' representation to resolve grievances.
17. May set up machines and equipment.

DOT JOB TITLE: Illustrator 141081042
(Commercial Artist, illustrating; graphic artist)

MAJOR JOB FUNCTION: Draws and paints illustrations for advertisements, books, magazines, posters, billboards and catalogs.

INSTRUCTIONS:

JOB DUTIES:

1. Studies design layout or proposed sketch.
2. Selects techniques such as pen and ink, watercolor, pastels, scratchboard, tempera or oils best suited to produce desired visual effect and to conform with printing material specified.
3. Executes design using selected techniques and rendering details from memory, live models, manufactured products or reference materials.

DOT JOB TITLE: Installer Repairman 822281038
(Installer-and-maintenance man)

MAJOR JOB FUNCTION: Installs and maintains telephones and auxiliary equipment.

INSTRUCTIONS:

JOB DUTIES:

1. Assembles telephone equipment on subscriber premises, mounts brackets and connects wire leads.
2. Tests newly installed equipment and equipment on which trouble has been reported.
3. Repairs or replaces faulty equipment, using electrician's handtools.

DOT JOB TITLE: Lay-Out Man 141081046

MAJOR JOB FUNCTION: Plans page layouts of illustrative material, such as sketches, photographs and diagrams, for use in preparing newspaper advertisements, books and technical manuals.

INSTRUCTIONS:

JOB DUTIES:

1. Apportions space and roughly arranges positions of illustrations.
2. Determines sizes of illustrations to be used to obtain maximum clarity and most desirable effect.
3. Indicates positions of illustrative materials on layout by sketching appropriate lines.
4. Marks worksheets with explanatory legends for printing.

DOT JOB TITLE: Lineman 822381026

MAJOR JOB FUNCTION: Installs and repairs telephone and telegraph lines (wires and cables) according to diagrams and using electrician's handtools.

INSTRUCTIONS:

JOB DUTIES:

1. Ascends poles or enters tunnels and sewers.
2. Cuts in feeder lines.
3. Attaches appliances, such as terminal boxes and repeaters.
4. Repairs or replaces defective lines and auxiliary equipment.
5. Unreels and strings lines from pole to pole and from pole to building.
6. Installs hardware, such as conduits and insulators.
7. Attaches appliances on lines.
8. Pulls lines through ducts by hand or by use of winch.

DOT JOB TITLE: Linofilm Machine Operator 650582010

MAJOR JOB FUNCTION: Operates machines to produce punched paper tape and to photograph information from tape onto film.

INSTRUCTIONS:

JOB DUTIES:

1. Types on machine with standard keyboard to produce punched, coded tape.
2. Obtains specified type-style font and places it in photo-machine turret.
3. Places film or photographic paper in machine.
4. Places punched tape on machine spindle.
5. Starts machine that photographically prints information from tape onto film or sensitized paper.

DOT JOB TITLE: Lithographer 971281014

MAJOR JOB FUNCTION: From customer copy or specifications, make camera negatives, strip negative parts onto masking sheet, expose stripped-in layout (flat) to presensitized offset plate, and chemically treat plate for use on press or for storage until needed.

INSTRUCTIONS:

JOB DUTIES:

1. Lays out and inspects customer specifications for job—line copy, photographs and/or drawings.
2. Makes "proof" (slick) of layout—camera ready copy of job.
3. "Proofs," i.e., compares camera ready copy to customer specifications.
4. Sets copy camera to enlarge or reduce copy to be photographed.
5. Shoots film (negative or positive) of camera ready copy.
6. Processes film in darkroom to secure negatives or positives for stripping in flat.
7. Determines press and bindery requirements of final copy by preparing folded dummy, signature arrangement and positioning of pages to fit the press.
8. Strips component parts with tape or adhesive on layout mask to complete layout of flat, using step and repeat method for multiples of same negative.
9. Where multiple copies are to be run on same sheet of paper, uses pins and reference lines for step and repeat process to expose same negative several times on a single plate.
10. Selects type of plate and exposure time for job.
11. Burns negative layout into presensitized plate.
12. Uses chemicals to desensitize plate and prepares for press.
13. Proofs completed plate for press operation.
14. Prepares proofed plate for storage or printing.

DOT JOB TITLE: Manager, Advertising 163168014

MAJOR JOB FUNCTION: Directs activities of workers concerned with sale of display and classified advertising for a publication.

INSTRUCTIONS:

JOB DUTIES:

1. Plans sales campaigns.
2. Assigns sales areas or lists of customers or prospects to be contacted by Salesmen, Advertising.
3. Checks individual sales records to determine amount of advertising sold, frequency of customer contacts and development of new accounts.
4. Consults with department heads and other officials to plan special campaigns and to promote sale of advertising to various industry or trade groups.
5. Prepares sales progress charts by area, type of industry or trade classification.
6. Corresponds with customers relative to advertising rates and policies or to solicit new business.
7. Selects and trains new sales personnel.

DOT JOB TITLE: Manager, Circulation 163118010

MAJOR JOB FUNCTION: Directs sales and distribution of newspapers, books or periodicals.

INSTRUCTIONS:

JOB DUTIES:

1. Directs circulation department staffing, training and performance evaluations to develop and control circulation program.
2. Coordinates circulation through establishment of sales territories, quotas and goals.
3. Assigns sales territory to selling personnel.
4. Evaluates dealer sales and assists dealer through training programs and sales promotion.
5. Reviews market analyses to determine customer needs, volume potential, price schedules and discount rates.
6. Develops sales campaigns to meet company goals.
7. Represents company at trade association meetings to promote publications.
8. Supervises liaison between circulation department and other units.
9. Analyzes and controls expenditures of department.

10. Analyzes circulations statistics to assist management in policy formulation.
11. Directs sales for publisher.
12. Supervises publication research and development.
13. Recommends or approves budget, expenditures and appropriations for research and development work.

DOT JOB TITLE: Manager, Station 184118050

MAJOR JOB FUNCTION: Manages a radio and television station.

INSTRUCTIONS:

JOB DUTIES:

1. Supervises directly or through subordinates, personnel engaged in activities such as sales, program, engineering and personnel.
2. Observes activities to insure compliance with Federal regulations.
3. Develops plans to promote sales of programs and time periods to advertisers and their agencies.
4. Negotiates with motion picture companies for purchase of independent film programs.
5. Confers with owners to discuss station policy and administrative procedures.
6. Contacts prospective buyers of station time to promote sale of station services.

DOT JOB TITLE: News Analyst, Broadcast 131068010
(Commentator; news commentator)

MAJOR JOB FUNCTION: Analyzes, interprets and broadcasts news received from various sources.

INSTRUCTIONS:

JOB DUTIES:

1. Examines news items of local, national and international significance.
2. Prepares script for broadcasts over radio or television station or network.

DOT JOB TITLE: Offset-Duplicating-Machine Operator 207782026

MAJOR JOB FUNCTION: Operates offset-duplicating machine to reproduce single or multicolor copies of charts, schedules, bulletins and related matter, according to oral instructions or layout and stock specifications on job order.

INSTRUCTIONS:

JOB DUTIES:

1. Installs sensitized metal printing plate or master copy of plastic coated paper around press cylinder of machine and locks plate or matter copy into position.
2. Turns handwheel and ink fountain screws to regulate ink flow.
3. Selects paper stock to be printed according to color, size, thickness and quantity specified.
4. Stacks paper on feed table and positions spring guide on side of paper stock.
5. Turns elevator crank to raise feed table to paper height.
6. Sets dial controls to adjust speed and feed of machine according to weight of paper.
7. Starts machine that automatically reproduces copy by offset process.
8. Cleans and files master copy or plate.
9. Cleans and oils machine.
10. Prepares printing plates.

DOT JOB TITLE: Offset-Press Man 651782042
(Lithographic-press man; offset-press operator)

MAJOR JOB FUNCTION: Makes ready and operates offset printing press to print single and multicolor copy from lithographic plates.

INSTRUCTIONS:

JOB DUTIES:

1. Examines job order to determine press time, quantity to be printed and stock specifications.
2. Washes plate to remove protective gum coating.
3. Builds up back of plate with sheets of folio to raise plate to printing level.
4. Installs plate with backing on plate cylinder and locks in position using hand tools.
5. Applies folio to blanket cylinder to build up to diameter of plate cylinder.
6. Fills ink fountains.

7. Adjusts controls to regulate moisture delivery to plate cylinder.
8. Operates press to secure proof copy.
9. Examines proof and adjusts press controls to obtain specific color registration.
10. Starts press and completes production run.
11. Removes and cleans plate and cylinders at end of run.

DOT JOB TITLE: Painter, Sign 970381046

MAJOR JOB FUNCTION: Designs, lays out and paints letters and designs to make signs.

INSTRUCTIONS:

JOB DUTIES:

1. Sketches design on paper using drawing instruments, such as angles, rulers and shading pencils.
2. Lays out design on plastic, silk or tin to prepare stencil, or on paper to draw pounce pattern.
3. Sketches or follows pattern to draw design or lettering onto objects, such as billboards and trucks.
4. Brushes paint, lacquer, enamel or japan over stencil.
5. Paints details, background and shading to fill in outline or sketch of sign.
6. When painting window signs, draws outline of sign on outside window, using chalk, or dust (pounces) pattern to make outlines.
7. Paints inside of window following drawing or outline using brush.
8. When making gold or silver leaf signs, forms sign by either of following methods:
   a. Paints sign, positions leaf over fresh paint and removes excess leaf after sign has dried, using cotton swab and knife blade.
   b. Paints inside of window with watersize (glue), applies leaf and paints sign in reverse on back of leaf.

DOT JOB TITLE: Paste-Up Man 979381030

MAJOR JOB FUNCTION: Photographs prepared copy, develops negatives and arranges and mounts illustrations and printed legends on paper according to artist's layout.

INSTRUCTIONS:

JOB DUTIES:

1. Measures and marks paper according to artist's layout, customers' instructions or Lay-Out Man's marks.
2. Determines position of illustrations and printed legend using ruler and drafting instruments.
3. Cuts illustrations, type matter and various shapes of black construction paper from larger sheets, using knife or scissors.
4. Fits illustrations and type matter into allocated space or positions for spot emphasis and background.
5. Prepares type headings to specified size and style, using bench-type photolettering machine.
6. Photographs illustrations directly onto paper, reducing or enlarging image using automatic focusing studio camera.
7. Develops and fixes photographs and headings and dries them on heated drum dryer.
8. Draws in borders, blocks, leads, lines, outlines and emphasis marks, using draftsmen's tools, pen and ink.

DOT JOB TITLE: Photographer, News 143062038
(Cameraman; photographer, newspaper)

MAJOR JOB FUNCTION: Photographs news events or people for use in illustrating news stories and articles.

INSTRUCTIONS:

JOB DUTIES:

1. Travels to assigned location and takes pictures using camera.
2. Returns to newspaper office with exposed plates.
3. Develops negatives.
4. Prints pictures for use in making printing plates to reproduce picture.
5. Keeps files of negatives or pictures for future use.
6. Makes enlargements of illustrative material secured by reporters.

DOT JOB TITLE: Press Maintenance Man 627281026

MAJOR JOB FUNCTION: Adjusts and repairs offset or letter-type presses.

INSTRUCTIONS:

JOB DUTIES:

1. Replaces broken or worn parts.
2. Lubricates and adjusts presses.
3. Disassembles and cleans ink rollers.

DOT JOB TITLE: Proof Reader 209688034

MAJOR JOB FUNCTION: Reads typescript or proof of type set up to detect and mark for correction any grammatical, typographical or compositional errors.

INSTRUCTIONS:

JOB DUTIES:

1. Places proof and copy side by side on reading board.
2. Reads proofs against copy, marking by standardized code errors that appear in proof.
3. Returns marked proof for correction and later checks corrected proof against copy.
4. Reads and corrects proof while Copy Holder (Clerical) reads aloud from original copy or reads proof aloud to Copy Holder (Clerical) who calls out discrepancies between proof and copy.

DOT JOB TITLE: Public-Relations Man II 165068022
(Director, publicity; director, public relations; manager, promotions; manager, publicity; press agent; promotion man; public events man; publicity agent; publicity man; publicity supervisor; publicity writer; public-relations counsel.)

MAJOR JOB FUNCTION: Plans and directs advertising and public relations programs to promote favorable publicity and create goodwill, working in financial, retail or similar business establishments.

INSTRUCTIONS:

JOB DUTIES:

1. Arranges for advertising in newspapers, and on radio and television, purchasing space or time required.
2. Writes news or human interest stories dealing with company activities and personnel or company-sponsored events for newspaper release.
3. Writes script for advertising on radio or television.
4. Plans special exhibits, lectures, contests or luncheons to promote goodwill and business services.
5. Organizes clubs, such as stamp, coin or book clubs, to stimulate interest of public.

DOT JOB TITLE: Radio Engineer 003187050
(Engineer, chief; engineer-in-charge; radio operator, chief, station engineer; technician, senior)

MAJOR JOB FUNCTION: Operates and maintains station audio and video transmission equipment in compliance with Federal regulations.

INSTRUCTIONS:

JOB DUTIES:

1. Diagnoses cause for malfunctions and oversees workers in adjusting and repairing station technical equipment.
2. Tunes transmitter for most efficient operation.
3. Oversees Transmitter Operators and instructs them in new operating methods.

DOT JOB TITLE: Repairman Foreman 822131018
(Customer facilities foreman; maintenance supervisor; manager, service; service-center supervisor)

MAJOR JOB FUNCTION: Supervises and coordinates activities of workers engged in installation, repair and maintenance of telephone facilities and teletypewriters, such as private and public telephones, switchboards and teletypewriters.

INSTRUCTIONS:

JOB DUTIES:

1. Inspects customer's premises to determine location of telephone and installation procedures.
2. Directs installation of telephones and auxiliary equipment such as brackets, wires and clamps.
3. Connects wiring to outside cable terminals.
4. Tests installed instruments and circuits for circuit continuity or to locate malfunctions, using tone and flicker sets.
5. Directs workers in repair or replacement of faulty equipment.
6. Studies production schedules and estimates man hour requirements for completion of job assignment.
7. Interprets company policies to workers.
8. Forces safety regulations.
9. Interprets specifications, blueprints and job orders to workers and assigns duties.
10. Establishes or adjusts work procedures to meet production schedules, using knowledge of capacities of machines and equipment.
11. Recommends measures to improve production methods, equipment performance and quality of repair.
12. Suggests changes in working conditions and use of equipment to increase efficiency of shop, department or work crew.
13. Analyzes and resolves work problems; assists workers in solving work problems.
14. Initiates or suggests plans to motivate workers to achieve work goals.
15. Recommends or initiates personnel actions, such as promotions, transfers, discharges and disciplinary measures.
16. Trains new workers.
17. Maintains time and production records.
18. Estimates, requisitions and inspects materials.
19. Confers with other foremen to coordinate activities of individual departments.
20. Confers with workers representatives to resolve grievances.

DOT JOB TITLE: Reporter 132268018
(Leg man; news reporter)

MAJOR JOB FUNCTION: Collects and analyzes facts about newsworthy events by interview, investigation or observation; writes newspaper stories conforming to prescribed editorial techniques and format.

INSTRUCTIONS:

JOB DUTIES:

1. Reports to scene of beat or special assignment, as directed.
2. Interviews persons and observes events to obtain and verify story facts and to develop leads for future news items.
3. Takes notes and reads publicity releases, copies of speeches or similar materials to facilitate organization and writing of story.
4. Types or writes story, referring to reference books, newspaper files or other authoritative sources to secure additional relevant fact that may influence viewpoint of story.
5. Refers stories to supervising editor for approval.
6. Receives and evaluates news tips and suggestions for future stories.
7. Monitors police and fire radio communications to obtain news story leads.

DOT JOB TITLE: Salesman, Advertising 258358010
(Advertising-sales representative; advertising solicitor)

MAJOR JOB FUNCTION: Sells classified and display advertising space for publication.

INSTRUCTIONS:

JOB DUTIES:

1. Prepares a list of products from leads in other papers and from old or expiring accounts.
2. Visits advertisers to point out advantages of own publication.
3. Obtains pertinent information concerning prospect's current advertising and results derived from it.
4. Prepares sample layouts with mats and writes copy and headings.
5. Collects accounts payable.
6. Originates and develops special advertising campaigns.

DOT JOB TITLE: Salesman, Printing 258358014

MAJOR JOB FUNCTION: Visits business establishments to solicit business for printing firm.

INSTRUCTIONS:

JOB DUTIES:

1. Interviews purchasing personnel and quotes prices on printed material from schedule or secures price from Estimator.
2. Explains technical phases, such as type size and style, paper stock, binding materials and various methods of reproduction.
3. Contacts prospects following leads submitted by management, established customers or developed through other sources.
4. Prepares sales promotional letters to be sent to prospective customers.
5. Submits formal bids on large orders of printed matter.

DOT JOB TITLE: Salesman, Radio and Television Time 253358010
(Account executive; sales executive)

MAJOR JOB FUNCTION: Contacts prospective customers to sell radio and television time for broadcasting station.

INSTRUCTIONS:

JOB DUTIES:

1. Calls on prospects and presents outlines of various programs or commercial announcements.
2. Discusses current popularity of various types of programs, such as news, dramatic and variety.
3. Arranges and accompanies prospect to auditions.
4. Prepares sales contracts.
5. Writes advertising copy and continuity.

DOT JOB TITLE: Sales Representative, Telephone Services 257258014
(Commercial representative; sales analyst)

MAJOR JOB FUNCTION: Sells telephone services to business accounts.

INSTRUCTIONS:

JOB DUTIES:

1. Contacts commercial customers to review telephone service.
2. Analyzes communication needs of business establishments, using knowledge of type of business, available telephone equipment and traffic studies.
3. Recommends services, such as additional telephone systems and speaker telephones.
4. Quotes rate for equipment usage, using brochure and demonstration equipment.

DOT JOB TITLE: Station Installer 822381050
(Line-and-station installer; telephone installer)

MAJOR JOB FUNCTION: Installs telephone station equipment, such as telephones, coin collectors, telephone booths and switching-key equipment, using handtools.

INSTRUCTIONS:

JOB DUTIES:

1. Inspects subscriber's premises to determine installation method.
2. Climbs poles to attach outside wires.
3. Connects telephone cable terminals with inside wires using drop (outside) wire and clamps.
4. Assembles equipment on premises and installs related inside wiring, using handtools and following installation diagrams and standard instructions.
5. Tests installation to insure that functions properly.

DOT JOB TITLE: Stripper 971381044
(Negative turner)

MAJOR JOB FUNCTION: Arrange and tape (adhesive) negative film (line copy, halftone negatives) or positives on layout sheets (flats) in preparation for making plates.

INSTRUCTIONS:

JOB DUTIES:

1. Makes folded dummy copy of final printed product for positioning of pages on plate to fit the press and binding requirements of cutting, folding and trimming.
2. Separates negative film parts for proper placement on layout mask.
3. Strips negative parts on layout mask (flat) using tape or adhesive, including register marks for alignment.
4. Spots pinholes and defects in negatives with opaque paint and artist's brush.
5. Scribes lines in negative material for border, column or rulings.
6. Positions color negative separations with register marks to obtain proper alignment.
7. Proofs flats for proper alignment of color separations to be printed.

DOT JOB TITLE: Telephone Engineer 003081098

MAJOR JOB FUNCTION: Designs, plans and oversees construction and operation of central and individual telephone communication systems and facilities.

INSTRUCTIONS:

JOB DUTIES:

1. Analyzes traffic and operation studies and engineering estimates to determine type, location and layout of equipment.
2. Oversees preparation of specifications and cost estimates.
3. Designs new or improved systems and facilities.
4. Coordinates and provides engineering assistance in construction and maintenance of equipment.

DOT JOB TITLE: Telephone Operator 235862026
(Control-board operator; p.b.x. operator; private-branch-exchange operator; switchboard operator; telephone-switchboard operator)
NOTE: Not to be confused with Central Office Operator.

MAJOR JOB FUNCTION: Operates cord or cordless switchboard to relay incoming, outgoing and interoffice calls.

INSTRUCTIONS:

JOB DUTIES:

1. Pushes switch keys to make connections and relay calls on cordless switchboard.
2. On cord-type equipment, plugs cord in jacks mounted on switchboard.
3. Supplies information to callers.
4. Records callers' messages.
5. Keeps records of calls placed and toll charges.
6. Performs clerical duties, such as typing, proofreading and mail sorting.
7. Operates system of bells or buzzers to call individuals in establishment to phone.

DOT JOB TITLE: Telephone Operator Chief 235138014

MAJOR JOB FUNCTION: Supervises and coordinates activities of Telephone Operators in telephone or telegraph office.

INSTRUCTIONS:

JOB DUTIES:

1. Notifies telephone company maintenance department of switchboard operational difficulties encountered and reported by operators.
2. Prepares work schedules and assigns switchboard positions to operators.
3. Trains new employees and keeps attendance records.
4. Maintains record of incoming and outgoing long distance and tieline calls, noting length and time of calls.
5. Relieves operators.

DOT JOB TITLE: Television Service and Repairman 720281018 (Television and radio repairman; television repairman)

MAJOR JOB FUNCTION: Repairs and adjusts radio and television receivers using handtools and electronic testing instruments.

INSTRUCTIONS:

JOB DUTIES:

1. Tunes receiver on all channels and observes audio and video characteristics to locate source of trouble.
2. Adjusts controls to obtain desired density, linearity, focus and size of picture.
3. Examines chassis for defects.
4. Tests voltages and resistances of circuits to isolate defect following schematic diagram and using voltmeter, oscilloscope, signal generator and other electronic testing instruments.
5. Tests and changes tubes.
6. Solders loose connections and repairs or replaces defective parts, using handtools and soldering iron.
7. Repairs radios and other equipment (Radio Repairman I).

DOT JOB TITLE: Transferrer I 972381014
(Composer; lithographic-press-plate maker, photomechanical; plate maker)

MAJOR JOB FUNCTION: Transfers positive or negative images to metal plates to make offset photolithographic printing plates, according to written or oral instructions, using liquid formulas, photocomposing machine, plate whirler,layout table and measuring instruments.

INSTRUCTIONS:

JOB DUTIES:

1. Mixes chemicals, using graduates, beakers and stirrers to prepare platemaking solutions, such as counter-etch, photosensitive coatings, developers, gum solutions, lacquers, developing inks and desensitizing etches, according to formulas and metal used.
2. Washes grained metal plate with running water or acid solution to remove dirt and grease.
3. Pours counter etching solution over grained surface and spreads with cotton pad to prepare smooth surface on plate.
4. Clamps plate on whirler disc, starts machine and pours sensitizing solution onto center of whirling plate to coat surface evenly.
5. Adjusts controls to regulate whirling speed, drying temperature and humidity.
6. Exposes plate to positive or negative image under arc lamp to transfer image to plate, using vacuum frame or photocomposing machine.
7. Determines length of exposure according to density of negative or positive sensitivity of coating, temperature, humidity and thickness of coating.
8. Develops transferred image on plate to retain specified surface in accordance with process and metals used by washing with water and applying lacquers, developing inks, desenitizing etches, gum solutions and asphaltum.
9. Perforates tape for operation of tape-controlled step-and-repeat machines.
10. Makes proof plates.

CURRICULA FOR CAREERS IN COMMUNICATIONS MEDIA

INSTRUCTIONAL CURRICULUM

This part of the Guideline includes:

- Purposes and objectives of **Orientation, In-Depth Exploration** and **Preparation** phase curricula.
- Procedures for selecting curriculum materials and learning activities.
- Curriculum and learning activities selected for use in **Orientation, In-Depth Exploration** career education programs.
- Curriculum and learning activities selected for use at the **Preparation** phase in the Graphic Communications occupational area. A model illustrating vertical and horizontal articulation of Graphic Communications programs is provided.
- An annotated bibliography of selected curriculum materials.

PURPOSE

The purpose is to assist educators coordinating or directing career education instruction in the **Orientation, In-Depth Exploration** and **Preparation** phases of career education. In this effort, the following is explored:

- The purposes
- The learner characteristics
- The learner constraints
- The objectives to be achieved

For the **In-Depth Exploration** phase, additional descriptions are provided:

- Selected learning activities
- Support services
- A model for evaluating instruction

CURRICULUM DESIGN

This segment considers the application of the perceptual model previously described. It is designed to focus on the developmental needs of people in career education.

It is important to base instruction on the level of learner development than on the tentative grade level achieved. With this as a premise, there is usually a group of identifiable learners at each level. In the instructional program that provides for it, there will be a constant shifting of students from one learning activity to another as the activity becomes appropriate to the individual.

Within a K-14 school system the occupational role of career education has two major functions—decision-making and preparation.

It is outlined as follows:

- Decision-making
  - — Awareness
  - — Orientation
  - — In-Depth Exploration
- Preparation

Experience with the definition and selection of appropriate career education learning experiences reemphasizes these considerations:

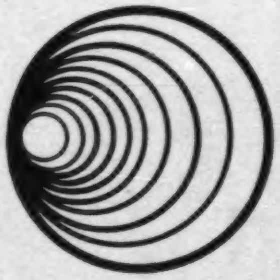
- Is the objective to support the learner in relation to decision-making or the preparation function of career education?
- Do the learning activities selected to support career decision-making include involvement of the individual learner's values of the citizen, family, leisure and occupational roles of a career?
- Do the learning activities selected to support occupational preparation provide the learner skills and knowledge that are relevant at the local, state, regional and national levels?

The focus of this Guideline has been on **In-Depth Exploration.** The descriptions of purposes and related items for other phases are included to assist the user in articulating career education instruction available locally.

PROCEDURES FOR LEARNING ACTIVITY AND MATERIAL SELECTION

The materials described were identified and selected by the CMO project staff and by personnel in field test sites as appropriate for career education instruction. Materials retained in the Guideline were evaluated by the field test personnel as:

- Contributing to the achievement of purposes and objectives of a particular career education phase.
- Efficient in terms of learner and teacher effort and time.
- Not requiring resources and support beyond what might be reasonably expected from state and/or local education agencies.



CAREER AWARENESS

The first phase of career education instruction helps the learner to expand both perception of self and the world of work. Beginning in kindergarten, the learner enters upon a series of experiences planned to provide an awareness of occupations that are representative of the world of work at the local, state, regional and national levels.

PURPOSES

Primary

- Develop a self-awareness of personal characteristics and values.
- Expand the learner's awareness of the occupational opportunities present in the world of work.

Secondary

- Increase an awareness of the contribution and interdependence of work done by people in a society.
- Increase an awareness of the world-of-work function, the duties and the tools used to perform "on the job" work activities within society.
- Increase an awareness of the relation of school to work.

CAREER ORIENTATION

In the **Awareness** phase, the learner's awareness expands from the jobs of people known to occupations beyond the community. The learner also gains a greater understanding of self, personal characteristics and values and relates this knowledge and its values to occupations in the world of work. In the **Orientation** phase the learner is taught to find and use more specific personal and occupational information; to bring the occupational role of career alternatives into focus. This experience reveals potential consequences of occupational choice upon individually valued citizen, family and leisure roles that contribute to a career. It assists in more effective decision-making, as the learner selects a potential career for **In-Depth Exploration.**

PURPOSES

The learner becomes aware of major sources of occupational information and how to use them. This capability frees the learner to return at any time in a career to reconsider prior or newly emerging career decisions.

Primary

- Learn to use available, relevant resources that orient the learner to the world of work and narrow the career focus to a cluster of occupations for **In-Depth Exploration.**

Secondary

- Make explicit values related to other life roles.
- Discover interests, needs, aptitudes and occupational opportunities.
- Expand and discover occupational options.

LEARNER CHARACTERISTICS

The career **Orientation** phase learner:

- Is aware of occupations representative of the world of work.
- Has not made an occupational choice or the choice was not based on adequate information about self and the world of work.
- Can relate self-assessment and career role values to broad categories of occupations.

OBJECTIVES

Terminal Objective

- Each learner will select an occupational cluster for **In-Depth Exploration.**

Enabling Objectives

- Each learner will make both a general and tentative occupational goal.
- Each learner will learn to use common sources of occupational information such as the **Dictionary of Occupational Titles**, the **Occupational Outlook Handbook** and other sources of available information.
- Each learner will assess personal aspirations, interests, values, needs, aptitudes and relate them to occupational alternatives.

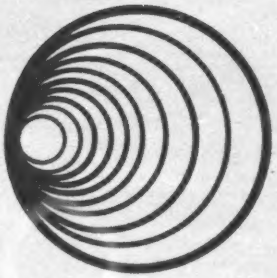
ACTIVITIES

The number of instructional programs developed for occupational **Orientation** is more extensive each year. The following chart shows a career orientation organization and resources indicating the wide options available.

CAREER ORIENTATION (GRADES 7-9)

UNITS	OBJECTIVES	ACTIVITIES
GRADES 7-12 Career decision-making instruction (Part I) and orientation to clusters (either 6 or 9 weeks)	• Learn to use common sources of occupational information such as the DOT, OOH, EOC, etc. • Learn to assess interests, values, needs, aspirations, etc. and relate them to occupational alternatives	• Take interest test • Instruction in use of DOT and related resources • Learn decision-making principles by applying them directly to students' life choices
GRADES 8 & 9 Practice decision-making and continue cluster orientation (either 6 or 9 weeks each cluster)	• Explore 3-5 clusters of interest • Decide if the Communication Media Occupations warrant in-depth exploration	• Learner selects cluster mini courses and practices decision-making skills as he/she explores each cluster • Student selects cluster mini courses or experiences. One of the clusters could be CMO's. (This cluster is treated in detail below) • Provide "laboratory" experiences to: — Explore broadcast occupations and processes — Explore graphics occupations and processes — Explore line occupations and processes
GRADE 9 Career decision-making (Part II) (either 6 or 9 weeks)	• Make both a general and tentative occupational goal	• Take interest and aptitude tests and through interpretation relate to and select a (USOE) cluster for in-depth exploration (which could be CMO cluster)

RESOURCES	CAREER EDUCATION OUTCOMES
• Search: Interest Check List, Job-O • Dictionary of Occupational Titles, Vol. I and Vol. II • Occupational Outlook Handbook • Encyclopedia of Careers • SUTOE or SUTOE Integrated (7th) • Career Survival Skills • Deciding • Decision • GIT-7 • Guidelines for an Exploratory Career Education Program • Appalachia Educational Laboratory/Career Information System	• Increasing self-awareness and self understanding; awareness of values, interests and abilities; developing a positive self-concept and positive, optimistic attitudes toward life. • Development of learning, problem solving, decision-making, goal-setting, planning, follow-through and evaluation skills. • Expanding awareness of the range of opportunities and increasing one's abilities for constructive, creative and self-fulfilling use of leisure time. • Development of interpersonal and social attitudes, self-confidence and skills necessary to live and work effectively with others. • Increasing awareness of family and citizenship roles and responsibilities and the improvement of skills and attitudes necessary for effective performance of these roles and responsibilities. • Increasing awareness of the broad range of occupations representative of world-of-work functions and the personal, social and economic significance of work. • Increasing awareness of the range of occupational opportunities within the career education clusters representing world of work functions. • Identification and initial exploration of a relevant career education cluster.
• SUTOE Integrated (8th) • USOE clusters • Introduction to Communications Careers • Graphics Learning Network "Orientation to Layout & Composition Occupations" "Orientation to Bindery & Distribution Occupations" "Orientation to Careers" "Multilith Offset 125 Duplicator, Exploratory Learning, Part I" "Multilith Offset 1250 Duplicator, Exploratory Learning, Part I" • Introduction to Manufacturing Careers (section on graphics)	
• SUTOE or SUTOE Integrated (9th) • Search: Interest Check List (ICL) and General Aptitude Test Battery (GATB) • Introduction to Communications Careers, Activities 10 and 11 • Graphic Communications Educaton Program SIPS: "Orientation to Graphic Communications Industries" "Careers in Graphics Communications" • Career Clusters: An Introduction to Related Occupations—"Communications & Media Occupations" • Career Maturity Inventory — "Attitude Scale" and "Competence Test" • Careers (game) • CBIE Visual Communication— Units: "Orientation to Visual Communications" "The Visual Communication Industry" • Exploring the World of Work • GIT-8 • Guidelines for an Exploratory Career Education Program • How to Choose Your Work • My Career Guidebook • Dictionary of Occupational Titles, Vol. I and Vol. II • Occupational Outlook Handbook • Encyclopedia of Careers • Ohio Career Development Program—"7-8 Career Orientation" • Appalachia Educational Laboratory/Career Information System	



CAREER EXPLORATION

In the prior phase the learner selected a career cluster for **In-Depth Exploration**. A learner choosing the Communications Media Occupations Cluster in this phase, would have opportunities to explore the broadcast, graphics and line communications occupational areas, occupational families and possibly selected occupations within the cluster. World-of-work experiences would then be relatable to a learner's aptitudes, interests and values. Completion of this phase would contribute in making occupational preparation decisions and decision-making about the world of work.

PURPOSES

The purposes of **In-Depth Exploration** are based on the following assumptions:

- Only when the learner has learned how to make occupational decisions will the option exist to cycle back to this phase of career development later in life.
- Until the learner makes an occupational decision, the learner is not ready to select and enter the career development later in life.
- Until the learner makes an occupational decision, the learner is not ready to select and enter the career **Preparation** phase.

Primary

- Learn how to make tentative decisions about selected occupations in light of individual values related to other life roles, interests, aptitudes and available job opportunities.

Secondary

- Learn how to explore occupational options within a cluster of occupations.
- Learn how to evaluate self as a potential employee.
- Select a tentative career goal and develop a plan for occupational role preparation based on knowledgeable educational and occupational decisions.
- Develop a positive self-concept of decision-making ability.

LEARNER CHARACTERISTICS

The career Exploration phase learner:

- Has tentatively selected an occupational cluster, i.e., the Communications Media Occupations cluster.
- Has related other life roles—citizen, family, leisure—values, interests and occupational opportunities to the selection of the tentative occupational cluster.
- Has not confirmed an occupational role focus through extensive on-the-job exploratory work experience or contact with relevant materials and processes.
- Can relate self-assessment to a broad category of occupations.
- Can use resource materials, such as the **Dictionary of Occupational Titles**, for in-depth study of occupations.

OBJECTIVES

Terminal Objective

- Each learner will make an informed, though tentative choice of a relevant occupational preparation program. In the CMO cluster it could be within one of the occupational families in the area of broadcast, graphics or line communications occupations. If the learner has decided against preparing for any of the communications media occupations, then the learner will select another cluster for **In-Depth Exploration.**

Enabling Objective

- Each learner will make a tentative occupational choice based on knowledge of self and knowledge of the communications media occupations.
- Each learner will learn how to make occupational decisions based on:

  —Analysis of self-interests, aptitudes, values and aspirations.

  —Direct experiences with a sample of the materials and processes representative of the communications media occupations.

  —Direct experience with communications media occupations workers and work environments.

  —Information relevant to the learner's concern about the occupations, such as income, employment opportunities and tenure, trends in worker skills and technology, training and entry requirements.
- Each learner will make tentative plans to acquire the education and training—in school and/or on-the-job—to meet the entry level and continuing requirements of an occupational choice.

ACTIVITIES

During **In-Depth Exploration** the focus is on materials, processes and people in occupations. The more direct these experiences are the more realistic will be the occupational decisions. The chart following indicates the kind of activities and resources — in and out of school — that could be made available for **In-Depth Exploration** of communications media occupations.

School Laboratory Experiences

These experiences are designed to give the learner a feel for the materials and processes of communications media. The learner may choose to focus upon broadcast, graphics or line communications experiences or may select an occupational family which transcends two or more of these areas — correspondent (Journalism) or photographer. Hopefully, the school can provide sufficient resources for the learner to gain broad experiences and thus not contribute to premature specialization.

DIRECT OCCUPATIONAL EXPERIENCES

At best, these are experiences gained in working in a business establishment with regular workers. The purpose is not to develop saleable skills, but to get a "feel" for the occupation being explored. The "feel" includes getting to know workers, their values about the job, their citizen, family and leisure roles, as well as developing some on-the-job requirements.

Arrangements for these experiences are facilitated through a community resources system. Detailed, specific arrangements for the experience are made between teacher-coordinator, learner and business establishment. The learner usually spends a specified time during or after school and on weekends.

Learners should be given opportunities to experience a variety of jobs and meet a variety of workers. It is not intended that learners do productive work, but some productive work can give a better feel for the variety of jobs in a given work establishment. Learners may receive school credit as they would for a homework assignment, but should generally not expect pay. The teacher-coordinator must be provided time to monitor this experience if schools are to ensure meeting the educational needs of the learner in an effective manner.

CAREER EXPLORATION (GRADES 9-10)

UNITS	OBJECTIVES	ACTIVITIES
In-Depth Exploration of CMO Cluster Occupations	Each learner will make a tentative occupational choice based on knowledge of self and the communications media occupations. Each learner will make tentative plans to acquire the education and training—in school and/or on-the-job—to meet the entry level and continuing requirements of an occupational choice. Each learner will learn how to make occupational decisions based on: —Analysis of self-interests, aptitudes, values and aspirations.	• Give students the opportunity to perceive the wide range of occupations presented by the CMO cluster. • When not possible for students to make direct contact with people in jobs or to prepare them to make direct contact with people in jobs or to prepare them to make maximum use of direct contact with people in CMO occupations, provide in-school experiences using resources such as those to the right.
In-Depth Exploration of Communications Processes	—Direct experiences with a sample of the materials and processes representative of the communications media occupations. —Direct experience with communications media occupations workers and work environments.	• Have students practice application of basic communication processes.
In-Depth Exploration of CMO Cluster Occupational Families	—Information relevant to the learner's concern about the occupations, such as income, employment opportunities and tenure, trends in workers skills and technology, training and entry requirements.	**PHOTOGRAPHERS** • Have students produce a photo report (4 or more photos), movie clip (30-60 seconds) in which they do photography, processing and finishing.
		ILLUSTRATORS • Have students apply basic principles of planning, design, layout, color and other artwork.
		CORRESPONDENTS • Have students gather data, outline, write and edit copy for graphic or audio presentation.
		TELEPHONE OPERATORS • Have students operate telephone and PBX equipment, receiving and transferring calls. • Have capable students rotate on the school's PBX.
		MESSAGE ASSEMBLERS • Have students apply basic methods and materials used in assembling images. • Have students assemble various types of images. • Have students try basic methods of converting camera-ready images to film negatives or positives.
		IMAGE CARRIER PREPARERS • Have students prepare image carriers of various types and produced mechanically, electronically or photographically.

RESOURCES

• Graphic Communications Education Program — Unit 1, Objectives 3-5	• Relating General Educational Development To Career Planning • World of Communications Audiovisual Media Unit SA • My Career Guidebook • Ohio Career Development Program K-10 "9-10 Career Exploration" • Planning Beyond High School • Worlds Within Worlds • Ideas Won't Keep • Photography Is • Career Awareness Education Films —"Commercial Artist" • Careers — "Careers in Graphic Arts", "Careers in Journalism" • Career Awareness Education Films —"Commercial Artist", "Television News Reporter", "Telephone Operator", "Pressman", "Television Engineer" • Careers — "Careers in Electronics" • Career Awareness Education Films —"Telephone Lineman"
• Introduction to Communications Careers — Activities 10 and 11 • Graphics Learning Network — "Orientation to Occupations" — "Layout & Composition"; "Bindery & Distribution"; Careers • Career Maturity Inventory — "Attitude Scale" and "Competence Test" • Dictionary of Occupational Titles - Vol. I, II and Supplements • Exploring Television • Guidelines for an Exploratory Career Education Program • Hello World — "Communications" • How To Choose Your Work	
• Graphic Communications Education Program Unit 1, Objectives 1-2, 6-9 • World of Communications Audiovisual Media — Units 1-7	
• Graphic Communications Series —"Photo Conversion" • Creative Photography: Darkroom Series • Outlines in Teaching a Course in Basic Photography • Outlines in Teaching a Course in Basic Movie Making • Outlines in Teaching a Course in Darkroom Technique	• World of Communications Visual Media — Unit 3 • Graphic Communications Educational Program — "Continuous Tone Photography" • CBIE Visual Communication — Unit of "Photographic Communication" • Creative Photography: Darkroom Series
• Graphic Communications Series "Artwork" • World of Communications — Visual Media — Units 4 and 5	• Graphic Communications Education Program "Layout & Design" Objectives 1, 3, and 6 • World of Communications — Audio Visual Media Units 36-37, 71-72
• World of Communications — Visual Media — Unit 4 • Learning How To Write a News Story	• World of Communications — Audio Visual Media Units 8-18, 32-35, 38-39, 73-79
• Teletrainer	
•Graphic Communications Series —"Image Assembly", "Photo Conversion"	• Graphic Communications Education Program — "Copy Preparation & Composition" Objectives 1, 2, 3; "Reproduction Photography" Objectives 1, 2, 3 • World of Communications —Audiovisual Media Units 19-25, 40-47, 81-87
•Graphic Communications Series —"Image Carrier Preparation" •World of Communications — Visual Media, Unit 6	• Graphic Communications Education Program, "Plates & Press", Objective 1 • CBIE Visual Communication —"Printed Graphic Communications", "Technical Graphic Communications"

CAREER EDUCATION OUTCOMES

Increasing self-awareness and self-understanding; awareness of values, interests and abilities; developing a positive self-concept and positive, optimistic attitudes toward life.

Development of learning, problem-solving, decision-making, goal-setting, planning, follow-through and evaluation skills.

Expanding awareness of the range of opportunities and increasing one's abilities for constructive, creative and self-fulfilling use of leisure time.

Development of interpersonal and social attitudes, self confidence and skills necessary to live and work effectively with others.

Increasing awareness of family and citizen roles and responsibilities and the improvement of skills and attitudes necessary for effective performance of these roles and responsibilities.

Increasing awareness of the broad range of occupations representative of world-of-work functions and the personal, social and economic significance of work.

Increasing awareness of the range of occupational opportunities within the career education clusters representing world-of-work functions.

Identification and initial exploration of a relevant career education cluster.

Selection of a tentative career focus and in-depth exploration of a relevant career education cluster.

Selection of an occupational focus and planning of career preparation program.

CAREER EXPLORATION (CONTD)

UNITS	OBJECTIVES	ACTIVITIES
		IMAGE TRANSFERRERS • Have students use a variety of procedures, materials and equipment used in transferring images to paper with emphasis on offset lithography.
		FINISHERS • Have students use the many processes used in finishing, including folding, slitting, creasing, gathering, collating, sewing, stamping, gluing, smashing and trimming.
		TELECOMMUNICATIONS OPERATORS • Have students set up and operate audio and video broadcast equipment under guidance of instructor or advanced student.
		SUPERVISORS • Have students organize and manage the technical components of graphic and broadcast communications processes to produce a quality product that meets requirements of customer and makes a profit.
		SALES-SERVICE REPRESENTATIVES • Have students plan, prospect, and sell advertising for graphic and broadcast productions.
		TELECOMMUNICATIONS INSTALLERS • Have students help set up and repair broadcast equipment. • Courses in small appliance repair and electronics provide exploration activities. • Have students who are interested in communications and electronics, consider occupations in this family.
		GRAPHIC EQUIPMENT INSTALLERS • Have students perform routine maintenance of graphic equipment. • Select interested students to help set up new equipment or modify existing equipment. • Mechanical courses, including machine shop, can provide other learning activities. • Have students who are interested in both graphics and mechanics, consider occupations in this family.
In-Depth Exploration of Several Job Titles, An Occupational Area, Or An Occupational Family		**DIRECT OCCUPATIONAL EXPERIENCES** • Provide experiences working in a business establishment alongside regular workers. The purpose is not to develop skills but to get a "feel" for the occupation being explored. The "feel" includes getting to know workers, their values about the job, their family and leisure roles, as well as on-the-job requirements. During this experience it is not intended that students do productive work, but some productive work can give the student a better feel for the variety of jobs in a given work establishment.

RESOURCES		CAREER EDUCATION OUTCOMES
• Graphic Communications Series "Image Transfer" • World of Communications — Visual Media, Unit 6	• Graphic Communications Education Program — "Plates & Press" Objective 1 • Graphics Learning Network — "Reproduction"	
• Graphic Communications Series —"Finishing Procedures". • Graphic Communications Education Program —"Binding & Finishing" Objectives 1, 2, 3, 4 (1st assignment), 5.		
• World of Communications — Audio Visual Media, Units 26 and 27, 47-50, 57-59, 88-89.		
• Graphic communications Series —"Decision-Making." • World of Communications — Visual Media Unit 7.	• World of Communications — Audio Visual 32, 62-66, 68-70, 80	
• World of Communications — Audio Visual Media, Units 31, 51-52, 67.		
• Cooperative Work Experience Coordinator's Manual. • Handbook on Work Experience Education. • A Guide For Cooperative Vocational Education. • Succeeding In The World of Work Program. • Community Resources (See Support Services).		

OCCUPATIONAL PREPARATION

In the **In-Depth Exploration** phase of career education, the learner selected a tentative occupational goal and made tentative plans for learning experiences — in and out of school — to help reach that goal. The task now is to prepare for entry into the world of work. Many of the **Communications Media Occupations** require post-high school preparation or specific training — usually technologically based and commonly available only "on the job." The occupational preparation focus of this Guideline is, therefore, upon the graphic communications occupations. This occupational area offers many job opportunities for those students who can participate in modern graphic communications education/training programs.

PURPOSES

The **Preparation** level instruction experienced by the learner affords the only opportunity for the learner to learn how to become prepared and responsible for coping with changing personal needs and changing technology that will surely be a part of his or her career. It is assumed that such learning will most likely occur if the learner is involved in the process of selecting those occupational preparation learning experiences that best meet the world-of-work requirements of the occupational role selected.

Primary

- Learn how to prepare for a job — develop strategies for becoming and continuing to be socially and technically competent.

Secondary

- Develop the social and technical skills for entry-level employment either by self or by others.
- Continue assessment of the occupational choice and modify goals if needed.
- Continue assessment of preparation plans developed in the **In-Depth Exploration** phase and modify if necessary.
- Develop skills for locating and getting placed in an occupation.

LEARNER CHARACTERISTICS

The career **Preparation** phase learner:

- Has an occupational role goal which may be focused upon an occupational area, an occupational family or a specific occupation.
- Has never been qualified, socially and technically, for entry-level into the tentative occupational role.
- Has elected to use the educational services of this career education system for achieving the selected entry-level preparation.

OBJECTIVES

Terminal Objective

- Each learner has developed strategies for becoming qualified and placed in a communications media occupation consistent with the stated tentative career goal.

Enabling Objectives

- Develop entry-level technical skills in the materials and processes of the communications media occupation selected.
- Develop entry-level social skills required by the communications media occupation selected.
- Develop job locating and placement skills for communications media occupations.

ACTIVITIES

Much of the entry-level occupational opportunity in the cluster requires preparation at the post-high school level — vocational, technical and/or professional. In those instances where the learner has selected such an occupational role, the instruction currently available in that community is probably most appropriate. Care should be taken, however, to continue to involve these learners in continuing contact with people currently employed in the world-of-work role for which preparation is being made. In addition the learner should consider taking advantage of local work experience programs, after school or summer work opportunities, and those entry-level occupations not requiring completion of post-high school training anticipated prior to entering the world of work.

In other instances, the learner may select an occupational role where on-the-job training is provided that is specific to the technology used by that employer, i.e., line communications occupations. The career education staff, in these instances, should work closely with local companies to determine the appropriate related training that would best prepare the learner for the occupational role selected. In some instances, the employer and the school district may be able to negotiate the development and conduct of cooperative training programs that will place graduates directly into entry-level positions. Examples of such CMO-related programs are those developed by the Pacific Bell System and two California school districts to select and train high school seniors as "Directory Assistance" and "Long Distance" Telephone Operators.

CAREER PREPARATION

FAMILY	OBJECTIVES	ACTIVITIES
A Photographers	• Expose, process and finish B&W and color transparency pictures	• Laboratory experiences in processing and finishing B&W and color film • Photographer for school paper and school annual
B Illustrators	• Develop artwork and layouts for graphic reproduction	• Courses in commercial art • Graphics lab in layout and design • Do artwork and page layouts for school paper and school annual
C Correspondents	• Express ideas in writing	• Courses in journalism and creative writing • Write for school paper and school annual
E Message "Assemblers"	• Produce camera-ready copy • Produce line and halftone negatives for single and multicolor plate making	• Graphics lab in copy preparation and composition • Graphics lab in reproduction photography
F Image Carrier "Preparers"	• Make image carriers for screen, letter press and offset single and multicolor jobs	• Graphics lab in image carrier preparation
G Image Transferrers	• Produce single and multicolor copies via screen, letterpress and offset processes	• Graphics lab in image transfer
H Finishers	• Perform bindery and finishing operations such as: collating; paper cutting; folding; stitching; padding; drilling and punching; glue and plastic binding and jogging	• Graphics lab in binding and finishing
K Supervisors	NON ENTRY LEVEL OCCUPATIONS	
M Sales-Service Representatives	• Sell printing equipment, supplies and products	• Preparation programs in distributive education • Graphics program providing knowledge of equipment, supplies and processes
P Graphic Equipment "Installers"	• Install and maintain graphic equipment on site	• Preparation programs in mechanics, electrical and electronics • Specific preparation by hiring company
		NOTE: Concurrently with all of the above activities an adequate work experience program is essential if the student is to be truly occupationally prepared. It is very difficult to simulate the social and economic realities of an employee's work environment.

(Graphic Communications Occupational Area — Grades 11-14)

RESOURCES	CED. OBJ.
• GCEP — Unit on "Cont. Tone Photo"	Levels 1 - 7, 10 - 14 from "Career Education System Development Model"
• GCEP — Unit on "Cont. Tone Photo"	
• GCEP — Unit on "Copy Preparation & Composition" • GCEP — Unit on "Reproduction Photography"	
• GCEP — Unit on "Plates and Press" "Binding and Finishing" — Objective 7 (only)	
• GCEP — Unit on "Binding and Finishing" — Objective 4 (only) Unit on "Plates and Press"	
• GCEP — Unit on "Binding and Finishing"	
• Community Resources Program succeeding in the world of work program	

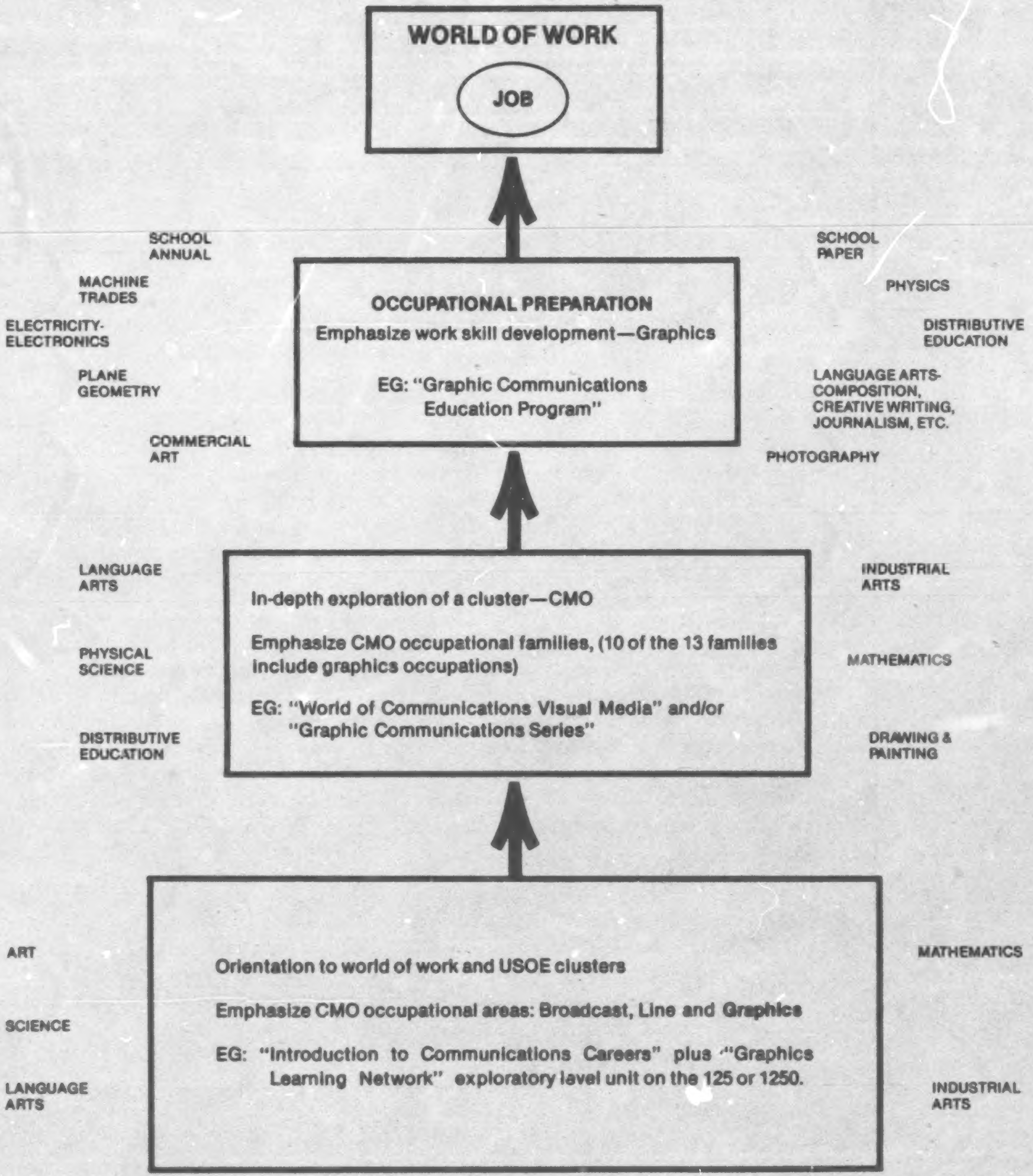
INDIVIDUALIZING CAREER PREPARATION INSTRUCTION:

An Example Using the GCEP Materials

STEP	TIME	ACTIVITY	REFERENCES TO CURRENT GUIDE	RATIONALE
1. Start first laboratory period	3 MIN	Hold up examples of photography, screen printing and offset lithography. **Briefly** explain process for each.	None	Students learn names of the 3 processes.
2. Call roll and divide class into 3 groups	2 MIN	Call roll and ask each student to say "Photography", "Screen" or "Offset". If a student doesn't decide immediately then assign him to one of the smaller groups (approximately 6 per group).	None	Students are assigned to 3 groups.
3. Demonstrate equipment	3 MIN	Demonstrate how to set up AV equip.	None	Students will be able to view SIPS without teacher assistance
4. Give group assignments	1 MIN	• Ask offset group to view 4 SIPS on offset • Ask photography group to view 2 SIPS on photography. • Take screen group to lab and demonstrate use of process camera.	None	Occupies 2/3 of class so 1/3 can work with instructor in use of process camera.
5. Groups work on assignment	90 MIN	Offset group views 4 SIPS; then proceeds to process camera demonstration; then is given assignment to return next class period with a design. Photography group views 2 SIPS; then proceeds to process camera demonstration; is given meter, camera and roll of film and sent home with assignment to shoot the entire roll. Screen group gets process camera demonstration; then views SIP and LAPS of screen printing; then leaves with assignment to develop a design.	"Orientation to Offset Lithography" "Offset Printing Plates and Their Preparation" "Direct Image Plates" "Feeding Stock" "Introduction to Photography" "How to Use a Light Meter" "Screen Printing" "Screen Printing Multi Colors on Cloth"	Students get initial input on their respective areas and leave with assignments to prepare for following laboratory period.
6. Second laboratory period	120 MIN	Send photography students to view SIP; then to darkroom to develop roll of film. (Time and temperatures are posted, chemicals labeled, etc.) Offset and screen students — instructor deals with problems in design; then sends students in different directions according to their need.	SIP and LAP on "Developing Roll Film"	
7. Third and succeeding laboratory periods	120 MIN EACH	From this point on, each student is guided through an individual program based on individual needs, interests and abilities, giving consideration to even distribution of students on equipment.		

This Guideline demonstrates the ability of the USOE cluster scheme to "facilitate the delivery of career education." The focus is upon the **In-Depth Exploration** phase of the career education system (in general) and the CMO cluster (in particular). **In-Depth Exploration** of a cluster, as part of an instructional process, assumes that the learner is engaged in an initial orientation/exploration of the cluster and will have an opportunity to be prepared for entry into occupations that are part of a cluster.

The chart opposite illustrates the activities and resources — in and out of school —that can be available to career **Preparation** for the occupational families in the graphic communications occupational area. The **Preparation** level instruction described, "Graphic Communications Education Program (GCEP)," is not meant to be taught to a class as a group in the order presented in the chart. The outline shows that the second laboratory session is much less structured and that during the third or succeeding laboratory sessions, the materials have become the basis upon which it is possible to involve learners in a completely individualized graphics program.


WORLD OF WORK
JOB
SCHOOL ANNUAL
MACHINE TRADES
ELECTRICITY-ELECTRONICS
PLANE GEOMETRY
COMMERCIAL ART
SCHOOL PAPER
PHYSICS
DISTRIBUTIVE EDUCATION
LANGUAGE ARTS-COMPOSITION, CREATIVE WRITING, JOURNALISM, ETC.
PHOTOGRAPHY
LANGUAGE ARTS
PHYSICAL SCIENCE
DISTRIBUTIVE EDUCATION
INDUSTRIAL ARTS
MATHEMATICS
DRAWING & PAINTING
ART
SCIENCE
LANGUAGE ARTS
MATHEMATICS
INDUSTRIAL ARTS

OCCUPATIONAL PREPARATION

Emphasize work skill development—Graphics

EG: "Graphic Communications Education Program"

In-depth exploration of a cluster—CMO

Emphasize CMO occupational families, (10 of the 13 families include graphics occupations)

EG: "World of Communications Visual Media" and/or "Graphic Communications Series"

Orientation to world of work and USOE clusters

Emphasize CMO occupational areas: Broadcast, Line and Graphics

EG: "Introduction to Communications Careers" plus "Graphics Learning Network" exploratory level unit on the 125 or 1250.

Schematic Diagram of Vertical and Horizontal Articulation Using CMO Cluster and the Occupational Area "Graphics" as Examples with Specific Examples of Instructional Programs Capable of Providing that Instruction.

ARTICULATING THE LEARNING ACTIVITY

Learning does not occur in isolation from a learner's past or future experience. It does not necessarily occur in isolation from what others — especially planners of instruction — may assume is unrelated experience. The task at hand is to provide a model set of CMO learning activities that illustrates the provision of career-related instruction at the junior and senior high school levels. The figure opposite presents a schematic overview of learning activities that could have been planned for an individual about to enter a Graphic Communications Occupation (GCO) in the world of work.

The figure indicates both the relevant learning experiences that should be available to a Graphic Communications Occupations' learner over time — career **Orientation, In-Depth Exploration, Preparation, Placement** in the world of work — and those less obvious, but highly relevant learning experiences that could be planned to occur at essentially the same time in other areas of study such as: English, history, mathematics, science, etc. The process of planning a sequence of relevant learning experiences that happen to a learner *over time* is called Vertical Articulation. The planning of relevant learning experiences that occur, in what appears at first glance to be unrelated areas of study and at approximately the *same time*, is **Horizontal Articulation.**

Noneducators commonly see past and current educational practice as both vertically and horizontally articulated. Most have forgotten that a lack of learner articulation was probably one of their most universal and valid in-school concerns. The difficulty of organizing, communicating and practicing functional articulation is, without doubt, the most frustrating problem facing career education today.

Articulation, then, requires that the personnel of career education institutions communicate — within and without, among and between themselves — as to the what, when and how of providing cost-effective, learner-relevant career education activity.

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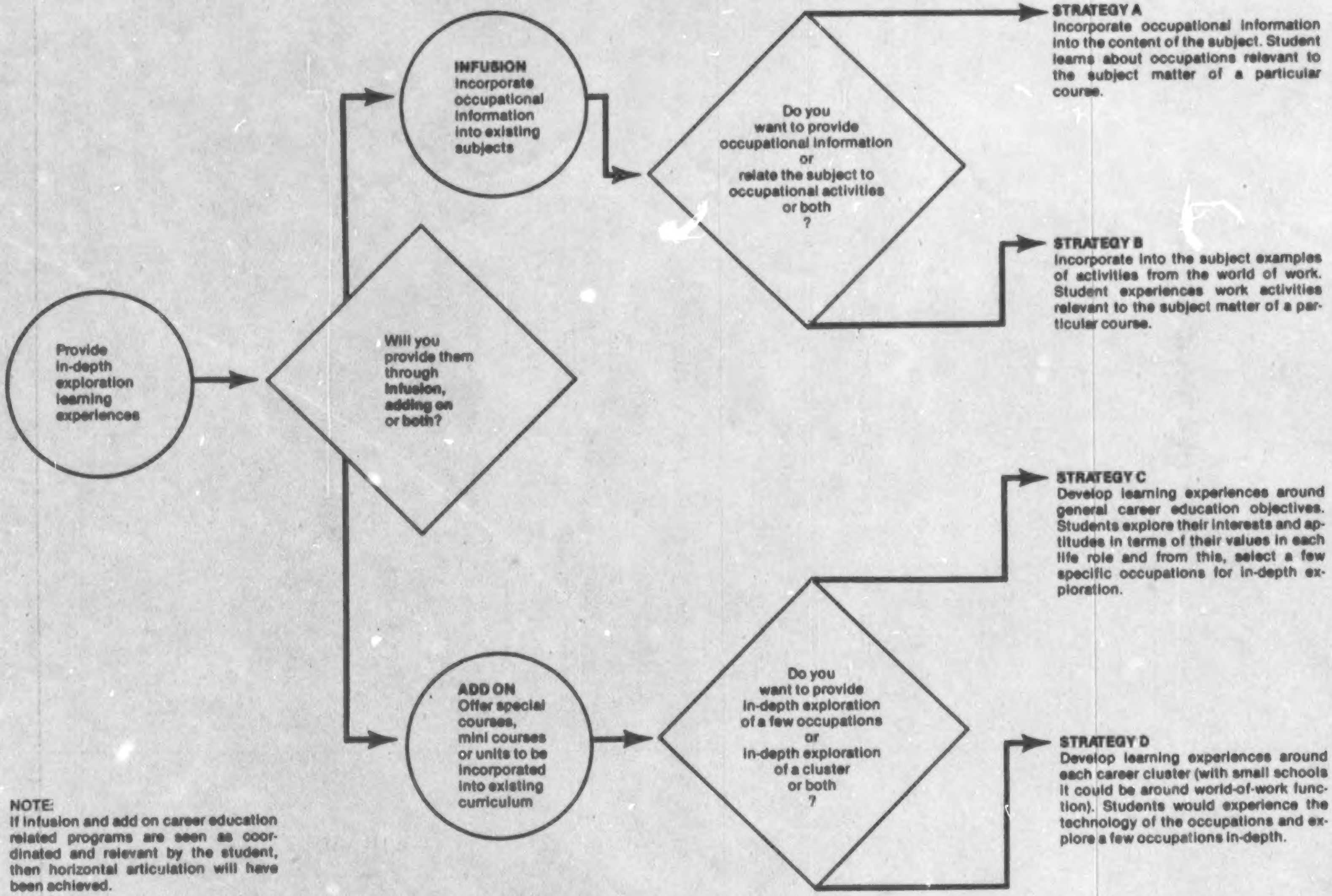
*The CMO Cluster Guideline limits its focus on articulation to problems relevant to this cluster and its utilization in local settings. USOE has made available a document that is intended for use with the overall USOE cluster scheme — Student Articulation Between Secondary and Post-Secondary Education: a Suggested Guide (Supt. Doc. Stock No. 1780-01294). Another document of similar nature is: Recommended School/College Articulation Practices, available from the Middle States Association of Colleges and Secondary Schools (Gateway One, Raymond Plaza West, Newark, NJ 07012).

Strategies for Horizontal Articulation of Career Education Learning Activities


Provide in-depth exploration learning experiences
Will you provide them through infusion, adding on or both?
INFUSION
Incorporate occupational information into existing subjects
ADD ON
Offer special courses, mini courses or units to be incorporated into existing curriculum
Do you want to provide occupational information or relate the subject to occupational activities or both ?
Do you want to provide in-depth exploration of a few occupations or in-depth exploration of a cluster or both ?

STRATEGY A
Incorporate occupational information into the content of the subject. Student learns about occupations relevant to the subject matter of a particular course.

STRATEGY B
Incorporate into the subject examples of activities from the world of work. Student experiences work activities relevant to the subject matter of a particular course.

STRATEGY C
Develop learning experiences around general career education objectives. Students explore their interests and aptitudes in terms of their values in each life role and from this, select a few specific occupations for in-depth exploration.

STRATEGY D
Develop learning experiences around each career cluster (with small schools it could be around world-of-work function). Students would experience the technology of the occupations and explore a few occupations in-depth.

NOTE:
If infusion and add on career education related programs are seen as coordinated and relevant by the student, then horizontal articulation will have been achieved.

The chart opposite and the following material describe strategies for Horizontal Articulation within a single career education institution. Horizontal articulation of any career cluster approach is facilitated in a school system whenever learners are provided an opportunity for **In-Depth Exploration** of occupational role alternatives in various ways. If occupational-relevant information can be infused into traditional nonoccupational subjects — math, English, science, etc. — as well as provided in cluster courses, career exploration will be enhanced. Richer and more meaningful educational experiences will result.

Horizontal articulation requires a motivation and desire to incorporate occupational information into learning activities by all involved — administrators, teachers, learners and members of the community. The processes for achieving this are technical at times, and outside consultants can sometimes facilitate the initiation of a facultywide effort by providing organizational skills and identifying necessary resources.

It is a basic requirement that the school administration and opinion leaders, in and out of school, be in open support of the undertaking. All involved staff must clearly perceive that value is placed upon accomplishing infusion and horizontal articulation throughout the total school program. This goal can be enhanced through:

- The presence of administrators at large and small faculty work sessions.
- Supportive public statements by top administration at both the school and district levels.
- Provision of substitutes, extra pay, etc. as necessary to getting the job done.
- Public recognition of the teachers implementing infusion and articulation programs.

Articulation coordinates infusion and ongoing **In-Depth Exploration** learning activity. When teachers are planning the incorporation of occupational information into the courses they offer, they will need to work in interdisciplinary teams. Team members will need to provide the learner with occupational role-relevant information and decision-making learning experience. If the teacher-learner atmosphere is one of mutual trust and respect, negotiation of honest differences will be resolved.

STRATEGIES

Four strategies are displayed on the following pages with a description of the infusion planning process. These strategies also illustrate examples of programs either currently or soon to be available.

STRATEGY I

INCORPORATE OCCUPATIONAL INFORMATION INTO THE CONTENT OF THE SUBJECT

The content of any given subject is used in a variety of occupations. The teacher incorporates information about those occupations into the content of the course to both show the relevance of the subject matter and to provide occupational information. Occupational information would include job titles, manpower projections, work activities, etc.

Advantages:

- Students see the application of the subject to occupational roles.
- Content and teaching methodology are enriched.
- Student awareness of occupations is broadened.

Disadvantages:

- If not skillfully done, could have "add on" flavor.
- Some career education needs could be overlooked if not coordinated with other occupational information programs.
- Scope and sequence across grade levels not assured.

Procedures for Implementation:

- Decide which approach to use—one based on worker trait groups or one based on USOE clusters.
- If based on worker trait groups:
  - Identify worker trait groups relevant to any given subject using the Appalachia Educational Laboratory's "School Subject-Occupation Index".
  - Identify exemplary occupations relevant to the worker trait group and the subject, again using the "School Subject-Occupation Index." CMO occupations are listed, along with worker trait group, in "Primary Occupations by School Subject."
  - Locate information about the occupations and workers in them.
  - Identify the specific nexis between the occupations and the subject.
  - Decide on learning activities which incorporate information about relevant occupations.
  - Provide instruction.
- If based on USOE clusters:
  - Identify clusters relevant to the subject.
  - Locate information about the primary and exemplary occupations in each cluster. See this guideline for CMO occupations.
  - Select a few job titles from each cluster to represent the content of the subject.
  - Identify the specific nexis between the occupations and the subject.
  - Decide on learning activities which incorporate information about relevant occupations.
  - Provide instruction.

STRATEGY II

INCORPORATE INTO THE SUBJECT EXAMPLES AND RELEVANT ACTIVITIES FROM THE WORLD OF WORK

Applications of the content of any given subject can be found in a wide variety of occupations. Many teachers already do this. What they do not do is link the application to occupations and thus miss rich teaching opportunities. Thus most subjects can be enriched by infusion of occupational content—examples of work activities linked with information about jobs—into a course.

Advantages:

- Students see the application of the subject to life situations.
- Teaching content and methodology is enriched.
- Student awareness of a variety of work functions is broadened.
- Students gain a feel for certain work activities related to known occupations.
- Students can try out occupationally relevant activities.

Disadvantages:

- If not skillfully done, could have "add on" flavor.

Procedures:

- Decide which approach to use—one based on worker trait groups or one based on USOE clusters.
- If based on worker trait groups:
  - Identify worker trait groups relevant to the subject.
  - Identify exemplary occupations relevant to the worker trait group and the subject.
  - Identify the main functions of each occupation, tasks and tools. The Dictionary of Occupational Titles, Vol. I is a first source, but probably will not be adequate for all occupations. Most effective, but also the most time consuming source would be actual job incumbents. With an established Community Resources Program, location of job incumbents will be facilitated. Other sources are career information materials, vocational advisory committees, vocational teachers, teachers who once held that job, etc.
  - Select work functions which exemplify the subject of the course.
  - Develop learning activities which use the work functions.

- If based on USOE clusters:
  - Identify clusters relevant to the subject.
  - Decide if you are going to develop most of the infusion content yourself or if you are going to attempt to locate and adapt programs already developed. (The latter approach is most efficient if programs are available. Basically, it requires identifying existing instructional programs which exemplify the cluster and fits the subject. For example: The World of Communications, Audio Visual Media and Speech, World of Communications Visual Media and English. Then incorporate the simulated occupational experience from the program into the course where appropriate and provide the instruction.)
  - If developing content yourself, identify the occupational areas and functions within clusters which are relevant to the subject.
  - Select work functions which exemplify the subject of the course.
  - Develop learning activities which use these work functions.
  - Provide instruction.

STRATEGY III

DEVELOP LEARNING EXPERIENCES AROUND IN-DEPTH CAREER EDUCATION OBJECTIVES

Courses, mini courses or units are developed to be added to the school program or existing subjects. In-depth experiences are provided through individualized instructional programs with each student ultimately exploring in-depth several occupations. Students might approach their study either through worker trait groups or USOE clusters. In the latter, for example, students in a given course might each be studying different clusters in-depth.

Advantages:

- Greater probability that major career education objectives will get attention.
- When articulated, this approach can complement other approaches.
- It can be a way of providing career education when other teachers in the system refuse to provide it.
- It can be particularly helpful for students needing an in-depth continuation of career orientation level decision-making learning activities.
- It is more adaptable to small enrollment rural high school settings where separate courses for each cluster is not reasonable.
- Greater application to orientation level than in-depth exploration.

Disadvantages:

- It could have an "add on" effect — career education in a "box".
- Decreased overall effectiveness if it doesn't involve a high percentage of teachers.
- If not articulated, it takes career education out of specific subject areas.

Procedures:

- Identify and refine specific career education objectives at the **In-Depth Exploration** level and for the specific school setting.
- There are three generally established ways for proceeding:
  - Add a unit to a course.
  - Establish a separate course.
  - Implement a self instructional program.
- If a unit is to be added to a course, a unit on communications occupations could be added to an English course as an example:
  - Adapt or develop a unit, drawing on cluster materials.
  - Adapt or develop learning activities.
  - Conduct instruction.

- If a separate course is to be established:
  - Review objectives and the school setting then establish a year, semester or quarter course.
  - Adapt or develop learning activities, being sure they provide opportunities for in-depth exploration of several occupations.
  - Conduct instruction.
- If a self-instructional program is to be implemented:
  - Define the scope and school resources for the self-instructional program.
  - Locate resources such as the **Career Information System** (Appalachia Educational Laboratory) and **Individualized Related Instruction for Entering the World of Work.**
  - Adapt or develop the materials.
  - Set up the program.
  - Conduct instruction.

STRATEGY IV

DEVELOP LEARNING EXPERIENCES AROUND EACH CAREER CLUSTER

Courses, and occasionally mini courses or instructional units, are developed around USOE career clusters. The cluster becomes the organizing principle around which **In-Depth Exploration** of occupations occurs. In small schools, such as rural high schools, cluster courses could be sequenced or world-of-work functions might become the organizing principle.

Advantages:

- Students can be exposed to a wide range of occupational possibilities within a delimited scope of interest.
- While initially narrowing a student's scope of exploration, in-depth study of a single cluster broadens student options through increased awareness of the wide variety of occupations with varying skill, knowledge and interest requirements within a given cluster.
- A greater opportunity to explore interests and aptitudes in a variety of related work settings.
- A greater opportunity to explore interests, aptitudes and occupational opportunities than usually possible in a preparation program.
- If teachers resist infusing occupational experiences in traditionally non-occupational courses, it is a way of providing those experiences.
- Instruction by clusters tends to be more thorough than infused instruction in traditionally non-occupational subjects.

Disadvantages:

- "Add on" to existing instructional program.
- Without care being exercised, cluster instruction may emphasize the technology to the exclusion of other career education objectives.

Procedures:

- Decide which clusters will be offered within the school program.
- Decide whether to develop instruction from USOE cluster guides or develop your own cluster from scratch.
- Decide if the cluster instruction is to be added to an existing course, to be developed as a single course or to be developed as a group of courses.
- If a unit is to be added to an existing course, such as the addition of a unit or series of units on graphic occupations added to a course on beginning graphics:
  - Adapt from the cluster guide the appropriate occupational definitions and learning resources. Continuing the example begun above: Extract out the graphic occupations, graphic occupational families and desired graphics resources.
  - Develop the unit(s) and acquire commercial resources.
  - Adapt or develop learning activities.
  - Conduct instruction.

- If cluster instruction is to be developed as a single course, such as a Communications Media Occupations Cluster course:
    - Select from the cluster guide those resources which will provide coverage of the cluster and best meets the needs of your school setting.
    - Make provision for **In-Depth Exploration** of a broad range of occupations within a cluster, such as the broadcast, graphics and line occupations, and the knowledge and the application of technology (processes) used in those occupations.
    - Develop and adapt learning activities.
    - Conduct instruction.
- If cluster instruction is to be developed as several courses:
    - Decide how the cluster is to be broken into courses. It could be by occupational areas (e.g., broadcast, line, graphics); by occupational family or subcluster of occupational families or around any other grouping that seems reasonable and yet in total covers the cluster. For an example of the latter, see Communications and Media Career Cluster instruction developed by the San Diego Unified School District.
    - Define the domain of each course.
    - Select from the cluster those resources which will provide coverage of the cluster and best meet the needs of your school setting. Assign them out to each course comprising the cluster.
    - Develop and adapt learning activities.
    - Conduct instruction.

EVALUATION MODEL

AS PLANNED			AS ACTUALLY HAPPENED		EVALUATION	
Specifications	**Indicators**	**Procedures for Collecting Data***	**Achievements Re: Specifications**	**Unexpected Events**	**Analysis of Deviations**	**Recommendations**
I. Desired Outcomes A. Primary Objective B. Secondary Objective	Indicators that will show what outcomes are actually achieved	How outcomes will be noted and recorded	Description of what specified outcomes were actually achieved	Unexpected outcomes (e.g., side effects)	Possible factors which may have influenced differences between planned and actual outcomes	Recommendations for change
II. Assumptions A. Learner Characteristics (Target population)	Indicators that describe the characteristics of the target population	How the learners who enter the program can be described	Description of learners who actually participated in the program	Unexpected aspects of learners actually participating	Possible factors which may have influenced differences between assumed and actual conditions	Recommendations for change in assumptions and resulting implications for planned inputs and outcomes
B. Learning Conditions	Indicators which describe assumed facilitating or inhibiting conditions		Description of conditions as actually found	Unexpected conditions encountered		
III. Planned Inputs		Ways to record actual inputs used	Description of actual inputs used	Unanticipated inputs used	Effects of differences between planned and actual inputs	Recommendations for modification of planned inputs
A. Procedures (methods, strategies, etc.)	A. Indicators showing if planned procedures were used		A. Description of extent to which planned procedures were used	A. Unanticipated procedures used		
B. Resources (materials, people, etc.)	B. Indicators showing if planned resources were used		B. Description of extent to which planned resources were used	B. Unanticipated resources used		
		*What form, how, from whom, when, where				

EVALUATING THE LEARNING ACTIVITY

Ongoing evaluation must be conducted as an integral part of all instruction to provide feedback to decision-makers and to determine those factors which facilitate or inhibit achievement of the instructional program objectives. The evaluation plan should be tied to the program assumptions, activities and outcomes. It can also support the development of an evaluation/feedback system for all the career education instruction provided. Specific assignments must be made for collecting, analyzing and interpreting data based on:

- Who needs the data?
- For what purpose?
- By when?
- In what form?
- How is it to be obtained? When? Where? From whom?
- Who designs the instruments and procedures for data collection?
- Who analyzes, interprets and prepares the data for presentation?

The chart opposite describes in general terms an evaluation model that can be applied to any level of instruction where desired outcomes, assumptions and planned inputs are known.

PRIMARY OCCUPATIONS BY SCHOOL SUBJECT

LANGUAGE ARTS

Composition, Creative Writing, Journalism

DOT JOB TITLE	DOT JOB CODE	WTG NO.*	WTG PAGE**
Announcer	159148 010	67	400
Classified-Ad Clerk	209388 018	24	276
Copy Writer	132088 010	112	524
Correspondent	132268 010	113	526
Editor, Department	132038 014	111	522
Editor, Newspaper	132018 014	111	522
Electronic Technician	003181 014	57	379
Manager, Advertising	163168 014	10	245
Manager, Station	184118 050	6	237
News Analyst, Broadcast	131068 010	111	522
Photographer, News	143062 038	3	230
Public-Relations Man II	165068 022	94	482
Reporter	132268 018	113	526
Salesman, Advertising	258358 010	97	488
Salesman, Printing	258358 014	97	488
Salesman, Radio and Television Time	253358 010	97	488
Telephone Engineer	003081 098	53	371

Speech, Debate, Dramatics

DOT JOB TITLE	DOT JOB CODE	WTG NO.*	WTG PAGE**
Announcer	159148 010	67	400
Central-Office Operator	235862 010	30	291
Central-Office-Operator Supervisor	235138 010	9	243
Correspondent	132268 010	113	526
Disk Jockey	159148 022	67	400
Editor, Department	132038 014	111	522
Editor, Newspaper	132018 014	111	522
Manager, Advertising	163168 014	10	245
Manager, Station	184118 050	6	237
News Analyst, Broadcast	131068 010	111	522
Public-Relations Man II	165068 022	94	482
Salesman, Advertising	258358 010	97	488
Salesman, Printing	258358 014	97	488
Salesman, Radio and Television Time	253358 010	97	488
Sales Representative, Telephone Services	257258 014	97	488
Telephone Operator	235862 026	30	291
Telephone Operator Chief	235138 014	9	243

Literature

None highly related

*Appalachia Educational Laboratory Code

**DOT VOL. II Page

MATHEMATICS

General Mathematics

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Cable Splicer	829381 010	37	312
Central-Office Repairman	822281 014	37	312
Circulation Clerk	209488 010	26	280
Classified-Ad Clerk	209388 018	24	276
Combination Man	822281 018	37	312
Contract Clerk	249368 018	16	258
Field Engineer	829281 034	37	312
Foreman, Printing Shop	659130 010	33	299
Installer Repairman	822281 038	37	312
Job Printer	973381 026	37	312
Justowriter Operator	209382 010	23	274
Lineman	822381 026	37	312
Lithographer	971281 014	37	312
Manager, Circulation	163118 010	6	237
Manager, Station	184118 050	6	237
Painter, Sign	970381 046	37	312
Paste-Up Man	979381 030	37	312
Photoengraver	971381 018	37	312
Photographer, News	143062 038	3	230
Press-Maintenance Man	627281 026	37	312
Repairman Foreman	822131 018	33	299
Salesman, Advertising	258358 010	97	488
Salesman, Printing	258358 014	97	488
Salesman, Radio and Television Time	253358 010	97	488
Sales Representative, Telephone Services	257258 014	97	488
Station Installer	822381 050	37	312
Stereotyper	975782 014	82	435
Telephone Operator Chief	235138 014	9	243
Television Service and Repairman	720281 018	37	312
Transferrer I	972381 014	37	312
Transferrer, Hand	972381 022	37	312

Algebra, Geometry

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Audio Engineer	003081 010	53	371
Electronic Technician	003181 014	57	379
Field Engineer	829281 034	37	312
Manager, Circulation	163118 010	6	237
Manager, Station	184118 050	6	237
Radio Engineer	003187 050	58	381
Telephone Engineer	003081 098	53	371
Television Service and Repairman	720281 018	37	312

Trigonometry, Higher Mathematics

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Audio Engineer	003081 010	53	371
Electronic Technician	003181 014	57	379
Field Engineer	829281 034	37	312
Manager, Station	184118 050	6	237
Radio Engineer	003187 050	58	381

SCIENCE

Biology

None highly related

Botany, Horticulture

None highly related

Chemistry

Foreman, Printing Shop	659130 010	33	299
Lithographer	971281 014	37	312
Photoengraver	971381 018	37	312
Transferrer I	972381 014	37	312
Transferrer, Hand	972381 022	37	312

Physics

Audio Engineer	003081 010	53	371
Cable Splicer	829381 010	37	312
Central-Office Repairman	822281 014	37	312
Combination Man	822281 018	37	312
Electronic Technician	003181 014	57	379
Field Engineer	829281 034	37	312
Installer Repairman	822281 038	37	312
Lineman	822381 026	37	312
Photographer, News	143062 038	3	230
Press-Maintenance Man	627281 026	37	312
Radio Engineer	003187 050	58	381
Repairman Foreman	822131 018	33	299
Station Installer	822381 050	37	312
Telephone Engineer	003081 098	53	371
Television Service and Repairman	720281 018	37	312
Transferrer I	972381 014	37	312

Earth Sciences

None highly related

SOCIAL STUDIES

History

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Editor, Department	132038 014	111	522
Editor, Newspaper	132018 014	111	522
News Analyst, Broadcast	131068 010	111	522
Reporter	132268 018	113	526
Government, Civics			
Correspondent	132268 010	113	526
Editor, Department	132038 014	111	522
Editor, Newspaper	132018 014	111	522
Manager, Station	184118 050	6	237
News Analyst, Broadcast	131068 010	111	522
Reporter	132268 018	113	526
Economics			
Contract Clerk	249368 018	16	258
Correspondent	132268 010	113	526
Editor, Department	132038 014	111	522
Editor, Newspaper	132018 014	111	522
Manager, Station	184118 050	6	237
News Analyst, Broadcast	131068 010	111	522
Public-Relations Man II	165068 022	94	482
Reporter	132268 018	113	526
Salesman, Advertising	258358 010	97	488
Salesman, Printing	258358 014	97	488
Salesman, Radio and Television Time	253358 010	97	488
Sales Representative, Telephone Services	257258 014	97	488
Sociology			
Copy Writer	132088 010	112	524
Editor, Department	132038 014	111	522
Editor, Newspaper	132018 014	111	522
Manager, Station	184118 050	6	237
News Analyst, Broadcast	131068 010	111	522
Reporter	132268 018	113	526

FOREIGN LANGUAGE

All Languages

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Announcer	159148 010	67	400
Copy Writer	132088 010	112	524
Correspondent	132268 010	113	526
Disk Jockey	159148 022	67	400
Editor, Department	132038 014	111	522
Editor, Newspaper	132018 014	111	522
News Analyst, Broadcast	131068 010	111	522

HEALTH AND PHYSICAL EDUCATION

Health Education

None highly related

Physical Education

None highly related

Sports, Recreation

Announcer	159148 010	67	400
Correspondent	132268 010	113	526
Editor, Department	132038 014	111	522
Editor, Newspaper	132018 014	111	522
News Analyst, Broadcast	131068 010	111	522
Reporter	132268 018	113	526

ARTS AND CRAFTS

Art (Drawing, Painting, etc.)

Advertising Lay-Out Man	141081 010	4	232
Art Lay-Out Man	141081 014	4	232
Bookbinder	977884 014	39	322
Illustrator	141081 042	4	232
Lay-Out Man	141081 046	4	232
Lithographer	971281 014	37	312
Painter, Sign	970381 046	37	312
Paste-Up Man	979381 030	37	312
Photographer, News	143062 038	3	230

Ceramics

None highly related

Instrumental Music

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Disk Jockey	159148 022	67	400
Vocal Music			
Announcer	159148 010	67	400
Disk Jockey	159148 022	67	400
News Analyst, Broadcast	131068 010	111	522
Industrial Arts			
Bindery Worker	643885 010	84	447
Bookbinder	977884 014	39	322
Cable Splicer	829381 010	37	312
Central-Office Repairman	822281 014	37	312
Combination Man	822281 018	37	312
Compositor	973381 010	37	312
Field Engineer	829281 034	37	312
Foreman, Printing Shop	659130 010	33	299
Installer Repairman	822281 038	37	312
Job Printer	973381 026	37	312
Lay-Out Man	141081 046	4	232
Lineman	822381 026	37	312
Lithographer	971281 014	37	312
Offset-Duplicating-Machine Operator	207782 026	82	435
Offset-Press Man	651782 042	82	435
Painter, Sign	970381 046	37	312
Paste-Up Man	979381 030	37	312
Photoengraver	971381 018	37	312
Photographer, News	143062 038	3	230
Press-Maintenance Man	627281 026	37	312
Repairman Foreman	822131 018	33	299
Station Installer	822381 050	37	312
Stereotyper	975782 014	82	435
Stripper	971381 044	37	312
Television Service and Repairman	720281 018	37	312
Transferrer I	972381 014	37	312
Transferrer, Hand	972381 022	37	312

AGRICULTURE

Agricultural Production and Management

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
None highly related			

Agri-Business (Agricultural Supplies and Services)

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Circulation Clerk	209488 010	26	280
Salesman, Advertising	258358 010	97	488
Salesman, Printing	258358 014	97	488
Salesman, Radio and Television Time	253358 010	97	488

Ornamental Horticulture

None highly related

Agricultural Mechanics

None highly related

DISTRIBUTIVE EDUCATION

General Merchandise

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Copy Writer	132088 010	112	524
Manager, Advertising	163168 014	10	245
Manager, Station	184118 050	6	237
Public-Relations Man II	165068 022	94	482
Salesman, Advertising	258358 010	97	488
Salesman, Printing	258358 014	97	488
Salesman, Radio and Television Time	253358 010	97	488
Sales Representative, Telephone Services	257258 014	97	488

Food Services

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Salesman, Advertising	258358 010	97	488
Salesman, Printing	258358 014	97	488
Salesman, Radio and Television Time	253358 010	97	488

Personal Services

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Central-Office-Operator Supervisor	235138 010	9	243
Manager, Advertising	163168 014	10	245
Public Relations Man II	165068 022	94	482
Salesman, Advertising	258358 010	97	488
Salesman, Printing	258358 014	97	488
Salesman, Radio and Television Time	253358 010	97	488
Sales Representative, Telephone Services	257258 014	97	488

Finance, Real Estate, Insurance

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Classified-Ad Clerk	209388 018	24	276
Contract Clerk	249368 018	16	258
Manager, Advertising	163168 014	10	245
Public Relations Man II	165068 022	94	482
Salesman, Advertising	258358 010	97	488
Salesman, Printing	258358 014	97	488
Salesman, Radio and Television Time	253358 010	97	488

HEALTH

Dental-Medical Assistant

None highly related

Practical Nursing, Nursing Assistant

None highly related

Other Health Assistants

None highly related

HOME ECONOMICS

Child Development, Child Care

None highly related

Foods and Nutrition, Food Management

None highly related

Clothing, Textiles, Home Furnishings

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Illustrator	141081 042	4	232
Salesman, Advertising	258358 010	97	488

Institution and Home Management Services

None highly related

BUSINESS AND OFFICE

Accounting, Bookkeeping

Circulation Clerk	209483 010	26	280
Classified-Ad Clerk	209388 018	24	276
Contract Clerk	249368 018	16	258
Manager, Circulation	163118 010	6	237

Business Data Processing

Manager, Circulation	163118 010	6	237
Manager, Station	184118 050	6	237

General Clerical, Filing, Office Machine

Central-Office Operator	235862 010	30	291
Central-Office-Operator Supervisor	235138 010	9	243
Classified-Ad Clerk	209388 018	24	276
Contract Clerk	249368 018	16	258
Offset-Duplicating-Machine Operator	207782 026	82	435
Offset-Press Man	651782 042	82	435
Sales Representative, Telephone Services	257258 014	97	488
Telephone Operator	235862 026	30	291

Stenographic, Secretarial, Typing and Related

Justowriter Operator	209382 010	23	274
Linofilm-Machine Operator	650582 010	23	274
Sales Representative, Telephone Services	257258 014	97	488
Telephone Operator	235862 026	30	291

TRADE AND INDUSTRIAL

Auto Mechanics

Press Maintenance Man	627281 026	37	312

Auto Body and Fender Repair

None highly related

Appliance Repair

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Cable Splicer	829381 010	37	312
Combination Man	822281 018	37	312
Press-Maintenance Man	627281 026	37	312
Repairman Foreman	822131 018	33	299
Station Installer	822381 050	37	312
Television Service and Repairman	720281 018	37	312

Carpentry, Woodworking

None highly related

Commercial Art

Advertising Lay-Out Man	141081 010	4	232
Art Lay-Out Man	141081 014	4	232
Illustrator	141081 042	4	232
Lay-Out Man	141081 046	4	232
Lithographer	971281 014	37	312
Painter, Sign	970381 046	37	312
Paste-Up Man	979381 030	37	312
Salesman, Advertising	258358 010	97	488

Drafting

Art Lay-Out Man	141081 014	4	232
Audio Engineer	003081 010	53	371
Electronic Technician	003181 014	57	379
Lithographer	971281 014	37	312
Paste-Up Man	979381 030	37	312
Radio Engineer	003187 050	58	381
Telephone Engineer	003081 098	53	371

Electrical, Electronic

Audio Engineer	003081 010	53	371
Cable Splicer	829381 010	37	312
Central-Office Repairman	822281 014	37	312
Combination Man	822281 018	37	312
Electronic Technician	003181 014	57	379
Field Engineer	829281 034	37	312
Installer Repairman	822281 038	37	312
Lineman	822381 026	37	312
Manager, Station	184118 050	6	237
Radio Engineer	003187 050	58	381
Repairman Foreman	822131 018	33	299
Station Installer	822381 050	37	312
Telephone Engineer	003081 098	53	371
Television Service and Repairman	720281 018	37	312

Graphic Arts

DOT JOB TITLE	DOT JOB CODE	WTG NO.	WTG PAGE
Advertising Lay-Out Man	141081 010	4	232
Art Lay-Out Man	141081 014	4	232
Bindery Worker	643885 010	84	447
Bookbinder	977884 014	39	322
Compositor	973381 010	37	312
Editor, Department	132038 014	111	522
Editor, Newspaper	132018 014	111	522
Foreman, Printing Shop	659130 010	33	299
Illustrator	141081 042	4	232
Job Printer	973381 026	37	312
Justowriter Operator	209382 010	23	274
Lay-Out Man	141081 046	4	232
Linofilm-Machine Operator	650582 010	23	274
Lithographer	971281 014	37	312
Offset-Duplicating-Machine Operator	207782 026	82	435
Offset-Press Man	651782 042	82	435
Photoengraver	971381 018	37	312
Photographer, News	143062 038	3	230
Press-Maintenance Man	627281 026	37	312
Salesman, Printing	258358 014	97	488
Stereotyper	975782 014	82	435
Stripper	971381 044	37	312
Transferrer I	972381 014	37	312
Transferrer, Hand	972381 022	37	312

Machine Trades

Bindery Worker	643885 010	84	447
Photoengraver	971381 018	37	312

Other Metal Working

Cable Splicer	829381 010	37	312
Stereotyper	975782 014	82	435

Cosmetology

None highly related

Quantity Food

None highly related

Textile Production and Fabrication

Illustrator	141081 042	4	232

IDENTIFIED MATERIALS FOR CAREER EDUCATION

AAPS: Local Attendance Area Planning for Career Education. Portland Public Schools, Area II, 8020 N.E. Tillamook, Portland, OR 97213.

A career education program assessment and planning guide. Developed for use in the Portland schools, but easily adapted for use in any school district. Accompanying "User's Guide" describes how to use it and describes applications across different levels within a district.

AAPS: Local Attendance Area Planning for Career Education — User's Guide. Oregon State University, Communications Media Occupations Cluster Project, 102 Batcheller Hall, Corvallis, OR 97331, 1973, 38 pp.

The guide was written to help local school districts use the **AAPS: Local Attendance Area Planning for Career Education** as a tool for assessment and planning their own career education program.

Advisory Committees in Career Education: Organization, Function, Maintenance, Meetings. Oregon State Department of Education, Career Education Applied Research unit, 942 Lancaster Dr., N.E. Salem, OR 97310, 1973.

A guideline with hints for establishing and operating advisory committees in Career Education from the elementary through the community college level. The guideline is organized into four major units (indicated by the title) and each give key concepts, a list of do's and don't's and step-by-step check lists. The appendix contains helpful materials such as checklists, sample letters, etc. This guideline can be used for initial planning as well as maintenance of career education advisory committees.

AEL Career Information System. Appalachia Educational Laboratory, Inc., Career Decision-Making Program, Box 1348, Charleston, WV 25325, 1976.

A system using a variety of methods and supporting materials for accessing career information and organizing career decision-making activities. The information system could be a major component toward development of the occupational decision making portion of a school's career education program.

The system is DOT based. The 114 Worker Trait Groups are used. Portions of the DOT were rewritten to make them appropriate for 8th grade reading level. Occupational information is referenced according to worker trait groups. Extensive cross indexes have been developed.

Basic Offset Instruction: (A.B. Dick) Models 324/326 and 350/360. A.B. Dick Company, 5700 W. Touhy Ave., Chicago, IL 60648.

Instructional programs (for equipment mentioned in the title) comprising 35mm filmstrips, audio cassettes, lap books and wall charts. Teacher's manuals were in development as of September, 1974. The program is appropriate for any level of career education where instruction is needed in operation of these A.B. Dick models. It is of doubtful value for instruction on other makes of equipment.

Blue Collar Trap. NBC Educational Enterprises, 30 Rockefeller Plaza, New York, NY 10020, 16mm, 51 min. color.

Film that explores the problems, politics, lifestyles and frustrations of America's young blue collar workers. Appropriate for career decision-making.

Career Awareness Education Films. University of Nebraska, Great Plains National Instructional Television Library, Box 80669, Lincoln, NB 68501, 1972.

Twenty 16mm film titles, each depicting an occupation have been produced. They can help students become aware of what a person in that job might do. The films appear to be appropriate for all age levels and all grades. Six of the titles are appropriate for the CMO cluster — television engineer, commercial artist, television news reporter, pressman, telephone lineman and telephone operator. Two other titles are shared with other clusters — executive secretary and computer programmer.

The Career Awareness Pocket Manual (for large, round pockets). Eugene Public Schools Education Center, 200 N. Monroe, Eugene, OR 97402, 1973.

A book describing career awareness in such a delightful way as to appeal to teachers, parents, administrators and school board members.

Career Centered Curriculum. City Schools, New Albany, MS 38652, n.d.

A handbook to help implement Career Education programs. It contains a description of the New Albany Career Education Program, a copy of the Career-Centered Curriculum Workshop Handbook and examples of career related instructional procedures and other information relevant to the Career Education project. The handbook is intended for administrators, teachers, counselors and Career Education Leaders.

Career Clusters: An Introduction to Related Occupations. by W.A. Zerface. H. Wilson Corp., 555 W. Taft Dr., South Holland, IL 60473, 1974.

A series of 16 cassette recordings designed to help junior high or middle school students who are beginning the process of career orientation and exploration. The first recording is an introduction to the clusters as defined by USOE and suggests 8 questions the student can ask when looking for careers to investigate. The remaining 15 recordings each are devoted to one USOE cluster title. The style of presentation is interesting with low key humor.

Career Education Curriculum Guide, Jerry C. Keiser and Elizabeth C. Wampler. Indiana State Department of Public Instruction, 120 W. Market St. Indianapolis, IN 46204, 1974.

A guide containing the Indiana State model and unit guides (K-5, 6-8, 9-10, and 11-12). Units are organized by subject area within a grade level and list objectives, learning activities and materials and resources. The appendices are a rich source of activities, books and pamphlets, bulletin board suggestions, commercial materials, etc.

Career Education In-Service Training Guide, by Louise J. Keller. General Learning Corporation, Morristown, NJ 07960, 1972, 46 pp.

A guide for providing background information and suggested procedures to help local administrators plan and implement a career education in-service training program. The Guide contains sections on the background from which career education has emerged, a survey of the present state of career education and procedures for implementing career education.

Career Education Monograph Series. Robert L. Morgan and Mollie W. Shook, eds. North Carolina State University, Center for Occupational Education, Raleigh, NC 27607, 1973.

A series of 9 monographs:

1. **A Manual for the Implementation and Administration of Career Education Programs** by Shook and Morgan.
2. **Elementary School Curriculum Guide** by Schreiber and Black.
3. **Middle School Curriculum Guide** by Scherer and Clary.
4. **High School Curriculum Guide** by Hoyt and Woodlard.
5. **Postsecondary Career Education** by Childers and Nichols.
6. **Career Guidance** by Helling and Ruff.
7. **Placement and Follow-Up in Career Education** by Buckingham and Lee.
8. **Professional Development** by Swanson and Jervis.
9. **Involving the Community in Career Education** by Isenberg and Smith.

Career Education Personnel Model by John T. Obert and Eugene E. Trotter. University of Michigan, School of Education, Ann Arbor, MI 48104, 1974.

A model for competency-based preparation and training of educational personnel (K-12) who will plan and implement career education programs at the local level. The model was developed by identifying and validating necessary knowledge and skill competencies. The competencies were organized to guide preservice and inservice education programs.

Career Education: Promising Practices in Small Schools. Northwest Regional Educational Laboratory, 710 S.W. 2nd Ave., Portland OR, 97204, 1973, 80 pp.

Identifies and describes 18 imaginative and comprehensive career education programs, and indicates sources of additional information. The descriptions are intended to suggest types of CEd programs that may be implemented in small schools at reasonable cost, and that capitalize upon unique characteristics of the rural environment. Descriptions are based on information provided by the project directors, teachers and school administrators directly involved in the programs. Programs range from awareness to preparation.

Career Education Source Book for Planning. Utah State Department of Education, Project Next Step, 136 E. South Temple St., Salt Lake City, UT 84111, 1973.

A source book for the Project Next Step Planning Guide. It contains illustrations, forms, etc., too voluminous to be included in the Guide.

Career Maturity Inventory (CMI). CTB/McGraw-Hill, Del Monte Research Park, Monterey, CA 93940, 1973.

An instrument with two major components — **Attitude Scale** and **Competence Test.** The Scale can be used for screening students who seem to need counseling and to evaluate the outcome of career education efforts. The Test consists of five sub parts that measure the following Career Choice Competencies: Knowing yourself (self-appraisal); Knowing about jobs (occupational information); Choosing a job (goal selection); Looking ahead (planning); and What should I do? (problem solving). The instrument has been used in grades 6-12.

Career Program Planning System (CPPS) Oregon State Department of Education, 942 Lancaster Dr., N.E., Salem, OR 97310, 1974.

A data system for decision making about career education program planning. Two types of data are provided: 1) Manpower data (Oregon data re: past, present, future employment, future demand and local data on present employment and future demand for six of Oregon's administrative districts) and 2) Manpower supply data indicating how many people are being trained for specific (approx 3500 or 80%) occupations in various training institutions throughout the state. Other information provided includes: Oregon career cluster code, worker trait group classification (DOT), U.S. Office of Education codes, Department of Labor's DOT nine digit code numbers, job title and alpha descriptions. Data is in a computer based retrieval system (Oregon State University computer) with access from the Oregon State Department of Education and other appropriate terminals throughout Oregon. CPPS was designed to utilize manpower data from the Occupational Employment Statistics project of the Department of Labor. OES is presently under development in 29 states. It will be implemented nationwide in the near future.

Career Related Instructional Procedures: grades 6-12. New Albany City Schools, Career Education Program, New Albany, MS 38652, 1971, 110 pp.

A reference for ideas when planning career related instruction in the following subjects:
Middle School: Art, home economics, industrial arts, language arts, mathematics, physical education, science and social studies.
High School: American history, art, driver education, English, foreign language, health and physical education, home economics, industrial arts, mathematics, science, shorthand and bookkeeping, speech, world history.

Instructional procedures and resources and materials are described. Teachers and career education curriculum planners can use the reference for examples of ways career education occupational information and experiences can be infused into existing courses.

Career Survival Skills. Charles E. Merrill Publishing Co., 1300 Alum Creek Dr., Columbus, OH 43209, 1974.

A program to help students understand and use resources for life and career planning. Focus is on career development concepts and skills rather than specific jobs. Program consists of teacher's manual, spirit duplicator masters, tranparencies, cassette tape, an index, handbook, wall chart and three professional books. Program is appropriate for upper elementary through high school students who have need to focus on occupational decision-making skill development.

Careers. Pathescope Educational Films, Inc., 71 Weyman Ave., New Rochelle, NY 10802.

A set of programs containing two color filmstrips, record or cassette tape and a teacher's manual for each program. The three programs most appropriate for communications media occupations are: Careers in Journalism, Careers in Graphic Arts and Careers in Electronics. While designed for group presentation, they are appropriate for individualized instruction. The message relates jobs to a career field primarily through interviews with successful people in the field. The mood is to encourage the student to explore and consider occupations not previously considered.

Careers. Parker Brothers Inc., 190 Bridge St., Salem, MA 01970, 1971.

Equipment for a game of fame, fortune and happiness. The object is to "succeed" by earning fame, happiness and money points according to each player's predetermined formula. Players go through various occupations such as college, ecology and big business. The first player to achieve or exceed his own success formula is the winner. Variations include "partnerships" where couples or teams of two can play.

CBIE Visual Communication. Wichita Public Schools, The CBIE Project, 428 S. Broadway, Wichita, KS 67202, 1974.

A curriculum guide composed of four parts: Teacher Guide, Instructional Aids, Reading Material for students and Appendix A (Suggested instructional material including CBIE-developed slide series and commercially available materials). Units include: Orientation to Visual Communication, Photographic Communication, Printed Graphic Communication, Technical Graphic Communication, Communication Dissemination, The Visual Communication Industry. Target population: Grades 9 and 10. The materials in this guide provide a resource for teachers developing CMO exploration experiences. The materials appear to be biased toward information giving and weak on student hands-on activities, although some student activities are described.

Commanding Communication: Individualizing Instruction in Sentence Writing. by Helen S. Mills. Quest Publishers, Carmichael, CA, (will be available in 1974 from Scott Foresman & Co., 1900 E. Lake Ave., Glenview, IL 60025).

Text and other materials comprising a program of 9 self instructional units containing 57 lessons on how to write grammatically correct sentences through idea evaluation, language manipulation and revision. It is designed for grades 11-14 and could be used at in-depth, preparation and adult education levels.

Communications and Media Cluster. Ronald Detrick, San Diego Unified School District, 4100 Normal St., San Diego, CA 92103.

A collection of guides prepared for junior and senior high school teachers and media center coordinators. They are intended to supply the user with objectives, points to consider, learning activities, resources, field experiences and evaluation techniques for the courses which make up the cluster.

Community-Defined Expectations for School Curriculum Project. Battelle Columbus Laboratories, Educational Systems Group, 505 King Ave., Columbus, OH 43201, n.d.
Ohio: Educational Systems Group, Battelle Columbus Laboratories, n.d.

Report of a project involving development and implementation of a method for obtaining and organizing community-based information defining desired student skills and knowledge. The resulting information is in a form which permits curriculum planners to translate them into instructional objectives for school curriculum development. An audio tape and companion training guide also available to help other communities implement the method. The method is divided into three phases — recruitment and organization of community member participants, training of participants in structuring information relevant to curriculum and collecting and compiling the community-based curriculum information.

A Competency Based Training Program for Manpower Counselors. Northwest Regional Educational Laboratory and Oregon State University School of Education, 710 S.W. Second Ave./Lindsay Bldg., Portland, OR 97204, 4th rev., Sept., 1973.

A training program attempting to develop theory and practice for the manpower counselor based on what a manpower counselor must be able to do to provide manpower counseling. The primary manual contains two supplementary manuals — **Instructor's Key to Preassessment Materials** and **Implementing Competency Based Counselor Preparation: A Resource Manual.** The training program is divided into 8 competency areas — counseling techniques, staff relationships and correlation of counseling and administration functions, client information and referral services, populations served by manpower programs, assessment, career development, labor market and evaluation of counseling effectiveness.

Cooperative Work Experience Coordinators' Manual. The Oregon Board of Education, 942 Lancaster Dr., N.E., Salem, OR 97310, 1970.

A guide for teachers, coordinators, counselors and community leaders who may have a direct responsibility for establishing cooperative work experience education programs. It outlines factors which need to be considered before implementing a program, steps to be taken in the planning stages, responsibilities of the various participants (school staff, employers, student trainees, parents) and the minimum criteria for qualifying for (Oregon) state reimbursement.

Creative Photography: Darkroom Series, by Joel Benedict. Arizona State University, Audio Visual Services, Tempe, AZ 85281, n.d.

An instructional system designed to develop skills in roll film developing, making contact sheets and enlarging. Materials include teacher's manual, 5 color filmstrips, 5 audio cassettes. The system can be used for junior high school age through adults. The experience is appropriate for in-depth exploration or preparation.

Deciding. College Board Student Services, Decision-Making Program, 888 7th Ave., New York, NY 10019.

An instructional program aimed at helping students learn how to make decisions. For junior and senior high students in a school wide decision making curriculum, major component in guidance or part of subject areas such as English, social studies or health education. Appears appropriate for career education decision making, but shows some bias toward higher education.

Decision: A Values Approach to Decision Making. Charles E. Merrill Publishing Co., 1300 Alum Creek Dr., Columbus, OH 43209, 1974.

An instructional program designed to help students clarify their own values, examine the components of decision-making and apply their values to decision-making. Program includes text and teacher's manual, activity cards, cassette tapes, spirit duplicating masters, tape-filmstrip, a professional book or values clarification and program handbook. The program and text cover 14 topics of concern to today's students. Occupational choice is one of the 14. Appropriate for junior-senior high school.

Dictionary of Occupational Titles: A Supplement. (Selected Characteristics of Occupations (physical demands, working conditions, training time) . Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, 3rd ed., 1966.

A handbook which lists individual physical demands, working conditions and training time data for each job defined in the **Dictionary of Occupational Titles.** It provides more specific occupational characteristics data than that presented in Volume II. The information is useful for occupational counseling and for developing data for input into the career information system.

Dictionary of Occupational Titles: Definitions of Titles. Vol. I, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, 3rd ed., 1965.

A handbook which lists and defines the jobs currently in the American economy. It is aimed at personnel engaged in placement, counseling and related activities and for others concerned with the use of occupational information in vocational, personnel and related services and activities. Volume I can serve occupational education by providing a common definition — a uniform language throughout the country. CMO uses the titles to classify occupations into clusters, provide learners with job descriptions, etc.

Dictionary of Occupational Titles: Occupational Classification. Vol. II, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, 3rd ed., 1965.

A handbook which groups jobs having the same basic occupational, industrial or worker characteristics to help the user discern relationships among occupations and as a standard approach to classifying the abilities, vocational experiences and potentials of workers. The system can help teachers, counselors and students relate student interests and aptitudes to jobs through the USIS interest check list and General Aptitude Test Battery (GATB) through worker trait groups. Volume II is a major tool used by CMO for defining occupational families and for providing information for students.

Exploring Television, by William Kuhns. Loyola University Press, 3441 N. Ashland Ave., Chicago, IL 60657, 1971.

A book aimed at helping the reader understand, analyze, criticize, evaluate and judge his experiences as a television viewer. The book could be a useful reference or supplementary reading in a career education program where the communications media is being explored.

Exploring the World of Work. by William D. Martinson. H. Wilson, Corp., 555 W. Taft Dr., South Holland, IL 60473, 1970.

A series of 6 cassette recordings designed to help students develop a better understanding of the vastness of vocational opportunities, the need for planning and an approach to the study of careers. Twelve topics are covered: Introducing the World of Work, Part 1 (40,000 Occupations, the Need for Planning); Introducing the World of Work, Part 2, (An Approach to Studying Occupations); Outdoor Interest Occupations; Mechanical Interest Occupations; Computational Interest Occupations; Scientific Interest Occupations; Persuasive Interest Occupations; Artistic Interest Occupations; Literary/Musical Interest Occupations; Social Interest Occupations; Clerical Interest Occupations; and Women in the World of Work. The tapes are appropriate for exploring occupations at the orientation and in-depth exploration career education levels.

Getting It Together. Eugene Public Schools, 200 N. Monroe, Eugene, OR, 97402, 1974.

A teacher's guide for career orientation in a junior high school setting. The guide contains descriptions of exercises, forms, transparency masters, game parts, etc. G.I.T.-7 is a nine-week course in careers education for 7th graders with two main emphases: Self-awareness and an orientation to the world of work. G.I.T.-8 is for 8th graders to work in small groups on each of the following: Job study in a career center, study a local business, consumer-economics, play "Life Career" game, and compare responses to work between 7th and 8th grade.

Graphic Communications Education Program. Mr. Bill Treadaway, Printing Industry of the Carolinas, Inc., P.O. Box X 4487, Charlotte, NC 28204.

The curriculum is a set of instructional materials (teacher curriculum guide, 40 slide/tape self-instructional programs, and 40 learning activity packages) for graphic communications programs in industry and vocational/technical education. They are designed to contribute to the Preparation or On-the-Job levels of career education. These materials are referenced as examples of materials that could be adapted or adopted for programs designed to prepare workers for graphic communications occupations. The materials are also being referenced as an example of a curriculum developed after a thorough study of industry trends so students would not be studying and perpetuating areas, techniques and practices which are obsolete or seldom used by the modern graphic communications industries.

Graphic Communications Series. A.B. Dick Company, 5700 W. Touhy Ave., Chicago, IL 60648.

A learner package of eight instructional textbooks including programmed instruction, pre-tests and post-tests, laboratory projects. Topics include: **Communicating With Graphics, Art Work, Image Assembly, Photo-Conversion, Image Carrier Preparation, Image Transfer, Finishing Procedures** and **Decision Making.** The package can provide the learner with in-depth exploration experience in graphic communications processes.

Graphics Learning Network. Addressograph/Multigraph Corporation, 1800 W. Central Rd., Mt. Prospect, IL 60056.

An instructional program, including materials and equipment, for graphic communications occupations and skills. At the time of this review (3/14/75) programs developed included: at the orientation to occupations level — **Layout and Composition, Bindery and Distribution, and Careers;** at the exploration and skill development levels — reproduction programs for the 125, 1250 presses and 2000 copier. More programs are in development. A/M orientation materials are appropriate for career education orientation and in-depth exploration levels. A/M exploration and skill development are appropriate for some career education in-depth exploration and most preparation level experiences.

Guidance Materials with Focus at the Junior High School. Oregon State University, School of Education, Careers Oriented Relevant Education Project, Corvallis, OR 97331, 1972.

A collection of materials developed by school staff (Springfield, OR schools) to modify the total school curriculum to reflect a focus on the occupational, family, citizen and avocational careers (or life roles) of learners. It contains sections on: Decision-making skills; communicational skills; student assessment; orientation; and education and life careers information. The materials are most appropriate for orientation level and wherever career guidance is needed.

A Guide for Cooperative Vocational Education. University of Minnesota, College of Education, Division of Vocational and Technical Education, Minneapolis, MN 84111, 1969, 125 pp.

A guide for school staff, administrators and vocational educators. Areas covered include: Cooperative education and what it will do; what form and type is best for a specific school; meeting student and manpower needs; supervising employers; establishing administrative relationships; staffing programs; maintaining and improving coop education. Appendicies include checklists for administrators, for principals and for coordinators on establishing a coop program. A final checklist for coordinators is on recommended practices.

A Guide for the Implementation of Career Education in a Local Education Agency. The Utah Department of Public Instruction, 1400 University Club Bldg., Salt Lake City, UT 55455. Produced under Grant #OEG-0-71-4457 (357). No date.

A planning guide for local districts to assist them in improving educational planning. The guide is intended to be accompanied by the **Source Book.** The focus is on "Career Education."

Guidelines for an Exploratory Career Education Program Grades 7-10. by Chuck Crone (editor). Springfield Public Schools, 525 Mill St., Springfield, OR 97477, 1971.

A guideline to provide help to educators wanting to establish exploratory career education programs. The guideline includes: A rationale for an exploratory career education program, basic goals, specific outcomes in terms of behavioral objectives by grade level, the role of guidance, guidance goals, suggestions for program development, suggestions for the teacher, career development concepts ranked from 1-40 and occupations related to typical school courses. This guideline would be particularly helpful to career coordinators and planners.

Handbook for Analyzing Jobs. U.S. Department of Labor, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, 1972.

The handbook presents a structured procedure for obtaining and recording job analysis data. CMO used the handbook to develop definitions of what GED and SVP codes meant.

Handbook on Work Experience Education: A Guide to the Organization and Operation of Work Experience Education Programs. California State Department of Education, 721 Capitol Mall, Sacramento, CA 95814, 1965, 112 pp.

A handbook designed to assist school administrators implement California regulations and establish standards for operating work experience education. Chapters include: What is Work Experience Education? What Factors Must be Considered Before Starting a Work Experience Education Program? What Steps Should be Taken in Planning A Work Experience Education Program? What Are the Responsibilities of the Coordinator? Responsibilities of Employer? Legal Responsibilities for Those Involved? How Can Good Public Relations be Maintained? How Can a Work Experience Education Program be Evaluated? Appendix D contains a "suggested outline for work orientation course."

Hello, World! — Communications. by Ruth Love Holloway and Elaine H. Stow. Field Education Publications, Inc., 2400 Hanover St., Palo Alto, CA 94304, 1973.

A book for students exploring careers in communications. It focuses on careers in publishing, printing, radio and television through transcripts of interviews with people in the field and through photo essays of the people at work. This book is most appropriate for career orientation and secondly for in-depth exploration. (Other titles in the series include: Public Services, Transportation, Health Services, Environmental Control, Business Services, Technical Services, Food and Lodging Services.)

A Highway to Work and Play. McKnight Publishing Co., Bloomington, IL 61701.

A series of six teacher guides, one for each elementary grade and student materials to supplement existing curriculum with career awareness.

How to Choose Your Work. by Elna Stone. The Bruce Publishing Co., Div. Benziger, Bruce and Glencoe, 8701 Wilshire Blvd., Beverly Hills, CA 90211, 1969.

A learner workbook to help evaluate occupational assets and increase awareness of occupational options. The learner can be anyone from 14 years old. Major sections ask: What do you want to do?; What can you do?; and Kinds of work available to you.

Ideas Won't Keep. Eastman Kodak Co., Rochester, NY 14650, 1969.

A slide tape program on careers in printing, publishing and packaging appropriate for orientation or in-depth exploration of occupational opportunities, in the CMO occupational family of photographers.

Individualized Related Instruction for Entering the World of Work, by Grady Kimbrell and Ben S. Vineyard. McKnight Publishing Co., Bloomington, IL 61701, 1974, 128 pp.

A text-activity manual prepared for learners who are enrolled in work experience programs, but cannot or are not scheduled to meet for group instruction. It is designed for the coordinator and learner to select individual units as needed by the learner.

A coordinators guide is also available.

Introduction to Communications Careers. by A. Dean Hauenstein and Steven A. Bachmeyer. McKnight Publishing Co., Bloomington, IL 61701, 1975.

A complete instructional program including hardware and software, which focuses on jobs and functions in the communications industry. Focus is on radio broadcasting with some on television and motion pictures. Materials include text/activity manual, filmstrips, cassettes, games, sound effects and equipment (console, microphones, etc.) for producing audio and audiovisual programs. Most appropriate for orientation to the broadcast area of communications media occupations.

Introduction to Manufacturing Careers. by Willis E. Ray. McKnight Publishing Co., Bloomington, IL 61701, 1975.

A complete program (text/activity manual, filmstrips, cassettes, transparancies, testing materials and instructional equipment such as graphics manufacturing equipment and materials — silkscreen) aimed at the orientation level in the area of manufacturing. The graphics section could be adapted to communications media in the area of graphics.

Job-O. Arthur Cutler, et al. CFKR, P.O. Box 4, Belmont, CA 94002, 1972, 14 pp.

A learner used instrument for relating motivation for more education; activities enjoy doing; interest in jobs relating to people, data and things to 120 "representative" jobs. Fourteen page manual is reusable. Learner marks on the four page, "Job Title Search", which also contains U.S. Department of Labor employment and earning data for each of the 120 jobs (1970 data). Job-O could be most useful at the CEd orientation level. For in-depth exploration level, a "Job Title Search" could be developed for a specific cluster by selecting a sample of jobs from that cluster.

Learning Activity Packages for Photography and Printing, by Bob D. King. Visual Arts, 2001 W. 22nd St., Tucson, AZ 85713, n.d.

System of 18 modules to introduce students to photography and printing by means of learning activity packages. Materials include, in addition to the LAPS, slide/tapes. Module titles include: Basic contact Printing; Photograms; Contact Printing—matching paper and negatives; Twin lens camera; Roll film development; The 4 x 5 press camera; The exposure meter; Developing sheet film; Flash photography; Light sensitive materials; Floodlight photography; Advanced printing techniques; Filters; Dry mounting; Theory of light; Theory of lenses; Existing (available light photography) and Hyperfocal distance. Users have indicated additional benefits of this program are increased self-guidance and self-direction. Appropriate for in-depth exploration experience and grades 9-12.

Learning to Write a News Story. by Jerry and Corky Kirkpatrick. Commercial-Educational Distributing Services, Box 3711, Portland, OR 97208, 1973, 256 pp.

A classroom activity guide and teacher's resource book for high school journalism teachers. Content includes: Types of stories, news value, form, leads, writing style, editorial material, preparation of copy and headlines and layout. For each topic is the rationale, objectives, procedure, variations, suggested teacher observations, resource information and illustrations. This book is appropriate for beginning journalism—both advanced in-depth exploration or beginning preparation.

Long Distance Telephone Operators Program. The Pacific Telephone and Telegraph Company, 4 N. 2nd, San Jose, CA 95113, 1972.

A training program developed by Pacific Telephone and the Santa Clara Unified School District through their STRIVE program. It includes a curriculum guide of 46 lessons, specially constructed long distance cord board for classroom simulations and instructor training. It is a two-period semester length course designed to prepare senior high school students to become long distance operators. Students develop entry level skills which meet performance standards specified by the Pacific Telephone and Telegraph Company.

Mass Media, by Ann Christine Heintz, M. Lawrence Reuter, and Elizabeth Conley. Loyola University Press, 3441 N. Ashland Ave., Chicago, IL 60657, 1972.

A book which approaches the study of mass media "the way scientists study other things that are constantly changing." The book could be used during in-depth exploration and preparation for communications media occupations in career education, as supplementary reading. The book would be relevant as a text for consumer education.

Mass Media: Impact on a Nation. Guidance Associates of Pleasantville, Pleasantville, NY 10570, 1971.

Two color filmstrips and two, 12" long play records or two tape cassettes; includes teacher's guide containing discussion questions, activities and projects. Topics include; "Power and Functions" and "Responsibilities and Restraints". These materials explore the function of the mass media and the media's success in performing these functions. The materials would be appropriate for a CMO in-depth exploration class or a class in which CMO exploration experiences are infused.

Multi-Media Kit for Teaching Screen Printing, by Harry T. Famal, 14 Wispering Dr., Trotwood, OH 45426.

A multi-media kit appropriate for grades 3-14 to learn the basic concepts of silk screen printing. Kit includes slide/tape presentation, 8mm film loops, transparencies, study prints, screen printed samples and production materials plus detailed teacher's manual. These materials could be used at the awareness through preparation levels.

My Career Guidebook (2nd ed.), by Harry S. Belman and Bruce Shertzer. Benziger, Bruce and Glencoe, 8701 Wilshire Blvd., Beverly Hills, CA 90211, 1974.

A guidebook and teacher's manual to help students and others make plans for an orderly, intelligent preparation for entering their life work. The guidebook is intended for group use — group guidance courses, homerooms, orientation programs, occupational classes that emphasize career planning — and for use by individual students. The method is aimed at stimulating student thinking, discussing and investigating occupational opportunities.

The New York Times Career Education Program, New York Times College and School Service, Times Square, NY 10036.

An Educational program designed for intermediate and junior high school students to prevent dropouts. It is composed of a teacher's manual of curriculum aids (School Service Manual on Career Awareness) and subscriptions to the Daily Times, School Weekly, Monthly Background Supplement, Monthly Current Affairs Test, Career Awareness and Career Alert.

The Newspaper in America. Singer Education and Training Products. SVE Educational Filmstrips and Cassettes series. Available from: Society for Visual Education, 1345 Diversey Parkway, Chicago, IL 60614.

A six filmstrip/cassette tape package on: Weeklys and other publications, preparing news for print, understanding feature stories, writing for newspapers, reading daily newspapers and the finished newspaper. Teacher's guide and reading script provided.

Occupational Outlook Handbook. Bureau of Labor Statistics (DOL), Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, 1974-75 ed., 1970.

Handbook containing descriptions and occupational trends of 850 occupations. Included in the descriptions are nature of the work, places of employment, training, qualifications, advancement, employment outlook, earnings, working conditions and sources of additional information. Appropriate for all levels of career education where career decisions will be made.

Occupations and Careers. by S. Norman Feingold and Sol Swerdloff. McGraw-Hill, 1221 Avenue of the Americas, New York, NY 10020, 1969.

A reference book which can be used where students are exploring information about broad classes of occupations as in career orientation.

Office Duplication: Spirit Duplication, Stencil Duplication, Offset Duplication. Cardinal Associates, Inc., 427 E. Morehead St., Charlotte, NC 28202, n.d.

Curriculum and materials to teach the operation of spirit, stencil and offset duplication equipment; how to prepare and correct masters; and how to clean and do simple maintenance on the equipment. Materials include either nine 16mm continuous loop filmstrips and continuous loop audio tapes or nine 35mm filmstrips with separate audio cassettes. A teacher's guide is available for each unit. Materials are for 10th grade students with basic typing skills. Materials appear appropriate for CMO in-depth exploration and clerical preparation.

Ohio Career Development Program K-10. Ohio Department of Education, Career Development Program, 65 S. Front St., Columbus, OH 43215.

A set of three curriculum guides (K-6 Career Motivation, 7-8 Career Orientation and 9-10 Career Exploration) to help prepare the learner to make choices for preparation level (vocational or pre-professional) education. The Career Orientation Program devotes a special section to each USOE cluster. Objectives, activities and procedures and/or resource materials are given for each of the seven developmental areas identified for CMO. The Exploration guide divides occupations into 10 areas (CMO is an area) and provides resource references for each. These guides are appropriate for teachers and coordinators as a source of ideas.

Operation PLANS. Basic program participant materials. Worldwide Education and Research Institute, 2315 Stringham Ave., Salt Lake City, UT 84109, 1971.

Participant materials are for a training program to develop a core of trained personnel in SEA's and LEA's with a mastery of the procedures and techniques of the Systems Approach to Education. The training program focuses on the generic problem solving model and related tools.

Outline for Teaching a Course in Advanced Photography. Eastman Kodak Co., Consumer Markets Division, Rochester, NY 14650, n.d.

A course for beginning photographers who have learned the basics of still photography and feel the need to explore further more sophisticated ways to express themselves photographically. The course includes nine regular meetings and four optional meetings. Each meeting will last about 1-1/2 hours. The course contains a packet of pamphlets for helping the teacher which also may be purchased for student use. The course is appropriate for grades 7-12 to help learners with leisure, citizen and occupational roles.

Outline for Teaching a Course in Basic Darkroom Technique. Eastman Kodak Co., Consumer Markets Division, Rochester, NY 14650, n.d.

A packet of materials to help teachers provide students with a fundamental knowledge of darkroom practice. It covers the basic aspects of black-and-white film processing, printing and enlarging. Learners need no prior darkroom techniques, but need some previous picture-taking experience. Packet includes teacher's guide for 12 two-hour meetings (four of which are optional) and pamphlets for helping the teacher which may be purchased for student use. Content is appropriate for grades 8-12 to help learners with leisure, citizen and occupational roles.

Outline for Teaching a Course in Basic Movie-Making. Eastman Kodak Co., Consumer Markets Division, Rochester, NY 14650, n.d.

A packet of materials to help the teacher develop a course aimed at teaching students to plan, take, edit and present a 3-5 minute movie. Packet includes a teacher's guide for 12 one-hour lessons and pamphlets for helping the teacher which may be purchased for student use. Content and materials are appropriate for grades 5-12 to help learners with leisure, citizen and occupational roles.

Outline for Teaching a Course in Basic Photography. Eastman Kodak Co., Consumer Markets Division, Rochester, NY 14650, n.d.

A packet consisting of teacher's guide and sample publications to help the teacher which may also be ordered separately for student use. A catalogue describing movies and slide shows available for loan. Photo topics include: Picture taking, film and paper, darkroom operations and applications in education, business and industry. Teacher's guide includes general information and lesson plans for 6 one-hour meetings. Content and materials are appropriate for grades 5-12 to help learners with leisure, citizen and occupational roles.

Packages for Autonomous Learning Systems: The PAL System, by R. F. Latta. Western Washington State College, Bellingham, WA 98225

An individualized system for training teachers in the mechanics of planning, writing and evaluating learning activity packages (LAP's). The system is designed for use by teachers (K-12+) while in the field and those who have access to a classroom where developed products can be evaluated.

PCE/K-10 Activities for Career Education.: Portland Public Schools, Area II, 8020 N.E. Tillamook, Portland, OR 97213, 1973.

A notebook for 9th and 10th grade teachers in Portland schools to help them integrate career education into their curriculum. Section I, developed by teachers, contains school department plans for Career Education integration. Section II, includes guidelines and resources necessary for five project components to be integrated in all department curriculums. The five components are: file folder, self-understanding surveys, speakers, field trips and other resources.

Personnel Development for Career Education: A Selected Annotated Bibliography. The Center for Vocational and Technical Education, 1960 Kenny Rd., Columbus, OH 43210, 1973.

An annotated bibliography in staff development for career education, 1970-1973. Targeted toward those planning and/or working in the career education movement who have responsibility for preparing and using staff effectively.

Persuasion, by Ann Christine Heintz. Loyola University Press, 3441 N. Ashland Ave., Chicago, IL 60657, 1970.

A book to help the reader discover and develop skills people use to persuade one another. The book is relevant for study of mass media and for examining, analyzing, understanding, critically judging and evaluating advertising. The book could be used as a text or reference in consumer education or communications media for in-depth exploration and preparation.

Photography Is ... Eastman Kodak Co., Rochester, NY 14650, 1969.

A slide-tape presentation on career opportunities in professional and commercial photography. It is appropriate for orientation to CMO and in-depth exploration of the CMO occupational family of photographers.

Planning Beyond High School. by William D. Martinson. H. Wilson Corporation, 555 W. Taft Dr., South Holland, IL 60473, 1970.

A series of cassette recordings designed to help students appreciate the need for continuous education and to explore and understand some of the alternatives available. Topics of each tape include: Education as a continuing process, the need for planning, getting a job—now, apprenticeships and on-the-job training, careers in the military service, vocational education, technical schools, the community and junior colleges, about colleges and universities, the state college or university, private college or university and extension, evening, correspondence and work study. The cassettes would be useful to students individually such as in a library or career resource center.

Planning, Implementing and Evaluating Career Preparation Programs, by Joseph A. Borgen and Dwight E. Davis. McKnight Publishing Co., Bloomington, IL 61701, 1974.

A manual for development, implementation and evaluation of career preparation courses and programs in local schools. "The first section entitled, 'Program Management Strategies', essentially gives ... information to make the most effective use of the entire manual." This section refers to the four companion sections representing the four major components in the program planning and evaluating process—identification, development, implementation, and evaluation. Content of sections is in detailed step-by-step procedures for conducting a manpower supply and demand survey, writing student performance objectives based on identifiable competencies, using an occupational advisory committee, recruiting students conducting a student follow-up survey and more. Each activity includes sample forms, letters, reports, etc., to execute the specific activity.

Preparation and Counseling for the World of Work. Fort Benton Public Schools, Fort Benton, MT 59442, 1972, 207 pp.

A curricula and set of daily lesson plans for mini-courses at the elementary level. The mini courses on lettering and layout (4th grade) and photography (5th — 6th grade) are relevant to CMO occupations. The book is an attempt to develop attitude, appreciation and worth of all types of work in the world today.

Project "Occupational Versitility". by Highline School District, 15675 Ambaum Blvd., S.W., Seattle, WA 98166

An approach to teaching industrial arts. Separate unit shops are abandoned in favor of a large single room general shop. Teachers are teamed together. Activity areas are developed and expanded to include: Plastics, woods, power, electricity, electronics, bench, sheet, art and machine metals; foundry and forge; arc and gas welding; graphics; planning and drafting; general industries including construction, manufacturing, masonry, glass, tile, etc; crafts; and career guidance.

Each area is self-contained and is organized with open storage, making all tools, supplies, instructional materials and project samples readily available to students. Planning areas and necessary power equipment are easily accessible. The learning system is self-instructional. It is designed for grades 7-9. The approach provides an ideal way to become oriented to several clusters of interest.

Relating General Educational Development to Career Planning. U. S. Department of Labor: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, 1971.

A guide designed primarily for U.S. Training and Employment Service personnel and affiliated State agencies engaged in interviewing, counseling and planning educational programs for applicants. It is also useful to schools engaged in occupational education both in counseling and developing career education programs.

School Subject-Occupation Index. Appalachia Educational Laboratory, Career Decision-Making Program, Box 1348, Charleston, WV 25325.

A guide for relating school subjects to occupations and industries. Section on how to use the index describes 15 strategies for infusing occupational information into school subjects. Bulk of guide lists under each school subject, in order of most relevant DOT Worker Trait Group, occupations related to that subject. At the end of each subject list of occupations is a list of industries related to those occupations. This guide is particularly helpful to any teacher who is attempting to infuse information about occupations.

Student Articulation Between Secondary and Post-Secondary Education: A Suggested Guide. by Beryl R. McKinnerney et al. Texas A & M University, College of Education, Center for Career Development and Occupational Preparation, College City, TX 77843, 1974.

A guide to help secondary and post-secondary administrators, program faculties, admission officers, and other representatives alleviate articulation problems experienced by students in transition from secondary to post-secondary education. Focus is on individual articulation from any secondary program or intervening employment to private, public or employer based programs and institutions such as community colleges, trade schools, technical institutes, baccalaureate institutions, manpower programs and apprenticeships or other employer conducted training programs. The scope is intended to include all programs of career preparation representing any of the 15 USOE clusters.

Succeeding in the World of Work Program, by Grady Kimbrell and Ben S. Vineyard. McKnight Publishing Co., Bloomington, IL 61701, 1975.

A program consisting of text; two versions of an activities workbook, one for group and one for individual instruction, with teacher's guide, a guidebook and a 25 minute film to help teachers and coordinators implement a work experience program.

SUTOE. Oregon State Department of Education, 942 Lancaster Dr., N.E., Salem OR 97310.

Manual for a guidance-based program (Self Understanding Through Occupational Exploration) wherein students examine their own aptitudes and interests. Generally grades 7-10, in a special class which could vary from 6 weeks to one full year, or as an integrated program in other classes (SEE **SUTOE Integrated**). Most appropriate for orientation level career education.

SUTOE Integrated. Thora B. Gardiner Junior High School, 180 Ethel St., Oregon City, OR 97045, 1974.

Report of a project where junior high school staff implemented a career program into existing courses which involved all students and nearly all staff members. Positive staff and student attitudes were also achieved. This report is most appropriate for staff wanting to integrate career orientation into the existing courses and involving all teachers in helping their students make career decisions.

Telephone Operator Directory Assistance. Fremont Unified School District, 40775 Fremont Blvd., Fremont, CA 94538, rev. 1973.

A training program to teach basic skills necessary for employment as a Directory Assistance Operator for the Pacific Telephone Company. The semester length program includes a curriculum guide, teacher training and specially prepared equipment, records and tools for simulation. The program was developed by the Pacific Telephone and Telegraph Company and the Santa Clara Unified School District's STRIVE program.

Training Manual for the Dictionary of Occupational Titles. (3rd ed.) U.S. Employment Service, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, n.d.

A training manual to teach users of the DOT, 3rd ed. what is contained in the two volumes and how to obtain the information needed to classify jobs. The Manual uses a programmed instruction technique, involving completing statements or answering questions about the material.

Tri-County Development Project, Commercial-Educational Distributing Services, P.O. Box 3711, Portland, OR 97208.

A compilation of 15,000 learning goals covering the knowledge, processes and values-attitudes that 200 master teachers and curriculum specialists from 55 school districts in the Portland, Oregon metropolitan area believe students in grades K-12 might be expected to learn. The learning goals cover all major fields of instruction: Art, biological and physical sciences, business education, health education, home economics, industrial education, language arts, mathematics, music, physical education, second language and social science.

The learning goals are a set of nonprescriptive learning statements that can be used to clarify school district goals to the community, guide selection of teaching materials, organizing instruction and evaluating outcomes of instruction.

Two types of learning outcomes are stated. Program goals are stated broadly to aid in defining the scope of programs at the school system level. From 7 to 20 program goals are stated for each of 12 subject areas. Course goals are stated specifically for use by teachers in their individual schools and classes.

Goals in basic skills and career education are integrated into the total curriculum.

Two accompanying volumes provide comprehensive taxonomies to help locate goals and interpret their meaning. They are coded to show interrelationships and to facilitate interdisciplinary curriculum development and course planning.

Utah Model for Career Guidance K-12. Utah State Board of Education, 1400 University Club Bldg., Salt Lake City, UT 84111, 1972.

A state guide for local school personnel to use when developing their own career guidance programs. It presents concepts and developmental objectives relevant to the three main components of the (Utah) State Model for Career Guidance: Work and Leisure, Self and Others and Planning and Placement. Examples of behavioral objectives and learning activities related to the developmental objectives are included.

Vocational Education and Occupations. U.S. Department of Health, Education, and Welfare, and U.S. Department of Labor Manpower Administration. OE-80061, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, 1969.

A Handbook which links vocational-technical education programs and occupations. The information can help design or describe curriculum content related to occupations. CMO has incorporated the information into its Career Information System, but finds many occupations which were not linked to education program descriptions in this document.

The World of Communications: Visual Media. A. Dean Hauenstein and Steven A. Bachmeyer. McKnight Publishing Co., Bloomington, IL 61701, 1974.

An instructional system composed of textbook, student activity manual, teacher's guide, achievement tests and a variety of instructional aids including games, transparencies, films and charts. All supplies and equipment not normally stocked in an English/language communications department are also available.

Career education students can gain direct experience with the processes and practices used to send and receive knowledge via visual media. The materials were developed for high school students, grades 10-12 as an appropriate component of an English/language arts requirement. They could be used prior to or simultaneously with the A. B. Dick materials during CMO in-depth exploration.

Worlds Within Worlds. Eastman Kodak Co., Rochester, NY 14650, 1970.

A slide-tape presentation on career opportunities in professional and industrial photography. It is appropriate for orientation or in-depth exploration of the CMO occupational family of photographers.

THE SYSTEM

Previous sections of this Guideline were designed to:

- Provide a perspective of career education as applied to occupations in this Guideline.
- Define the occupations and groupings of occupations included within the cluster.
- Identify and relate current, or soon to be available, curriculum materials that are relevant to the needs of learners and teachers at the career **Orientation, In-Depth Exploration and Preparation** levels.

This section selectively reviews the elements needed in constructing a successful career education system in this cluster.

CONSIDERATION OF INITIAL PROBLEMS

Part of a report to a local school board by a K-14 Career Education Director, provides unusual insight into the problems of facilitating delivery of career education in most of the schools of our nation:

STATEMENT OF NEED AND JUSTIFICATION

District Characteristics

Our school district is a low wealth district as defined by the state of California and is a recipient of equalization aid. We have large numbers of students combined with a low assessed valuation. Advisory committees of over 142 individuals, representing business, industry, parents and students, have recommended career education be implemented as rapidly as possible in Fremont.

Community Input

Informal needs assessments have been conducted on an ongoing basis by individual schools and special educational services departments of our school district. These culminated in a community-wide survey of teachers, students and parents in 1971. This survey was designed to identify those educational programs and services which should carry the highest budget priorities when the district was faced with a fiscal squeeze. The survey determined that out of 60 budget priorities the highest priority should be given to honesty, morality and tolerance. Second priority was reading, writing and communication. The number three priority was career and vocational education.

Review of Career Education Systems

District staff have researched and, wherever possible, conducted onsite review of career education systems funded by the U.S.O.E. or the state of California.

The employer-based model field tested in the Oakland Unified School District was reviewed and rejected by local staff. The rejection was based upon an analysis that while this program would apply as alternative education, it in no way meets the needs of the vast majority of students in comprehensive high schools.

The residential-based model as demonstrated in Glascow, Montana was reviewed and rejected because there is no need to move families to one location for career education training within the geographical area of our city.

The school-based models were reviewed by staff at several locations. The Pontiac, Michigan demonstration site was rejected as a model because of the extensive restructuring of curriculum that was necessary in Pontiac. The philosophy and concepts of the district teaching staff do not require this extensive an effort. The school-based model at Mesa, Arizona which employed 45 specialists and 240 teachers in the summer was rejected on two grounds. First, we do not have the financial resources to operate a system of this type, and secondly, the materials developed will become outdated and require extensive re-writing on an ongoing basis. The school-based model in Los Angeles was also rejected as a model because it established separate counseling systems and separates academic and vocational education. We desire a coordinated system, not a separated system.

Within the state of California several models have been visited and reviewed. In San Diego the Wright Brothers Career Education High School was reviewed and the concept was rejected because of the separatism that occurs. It is our philosophy that all students in all schools shall receive career education.

The Santa Barbara Demonstration Program was visited and reviewed. The cost of operation of this system was prohibitive after federal funding was no longer available. This evaluation was borne out when Santa Barbara abandoned the system after three years of outside funding.

The Sonoma County/New Haven Career Education System was viewed and adopted at Green and Reynolds Elementary Schools in our district on a trial basis. After one year of operation, utilizing local funds, it became apparent that this model which required additional staff to take students on field trips to local industries and then report to the class was unfeasible for us. Not only did it require additional staff time, but we have 32,000 students and less than 1,500 industrial and business establishments. The business and industrial community, in cooperation with the school district, felt that they could not accommodate that large a number of students.

This extensive review indicated to staff that the only fiscally feasible solution to a career education was to . . . .

AN EVALUATION OF CAREER EDUCATION AND CLUSTERS

Organizers of cluster approaches to career education have tended to operate from at least three alternative perspectives.

At the elementary school **Awareness** level, the approach used usually attempts to represent the diversity of the world of work. At the junior high school or early high school levels the **Exploration** perspective is usually concerned with exploring occupational alternatives and making a tentative choice as to the occupational focus of the career for which the learner is to prepare. At the senior and post-high school levels, the focus is upon occupational education programs and work experiences that prepare the learner to achieve the career goal selected.

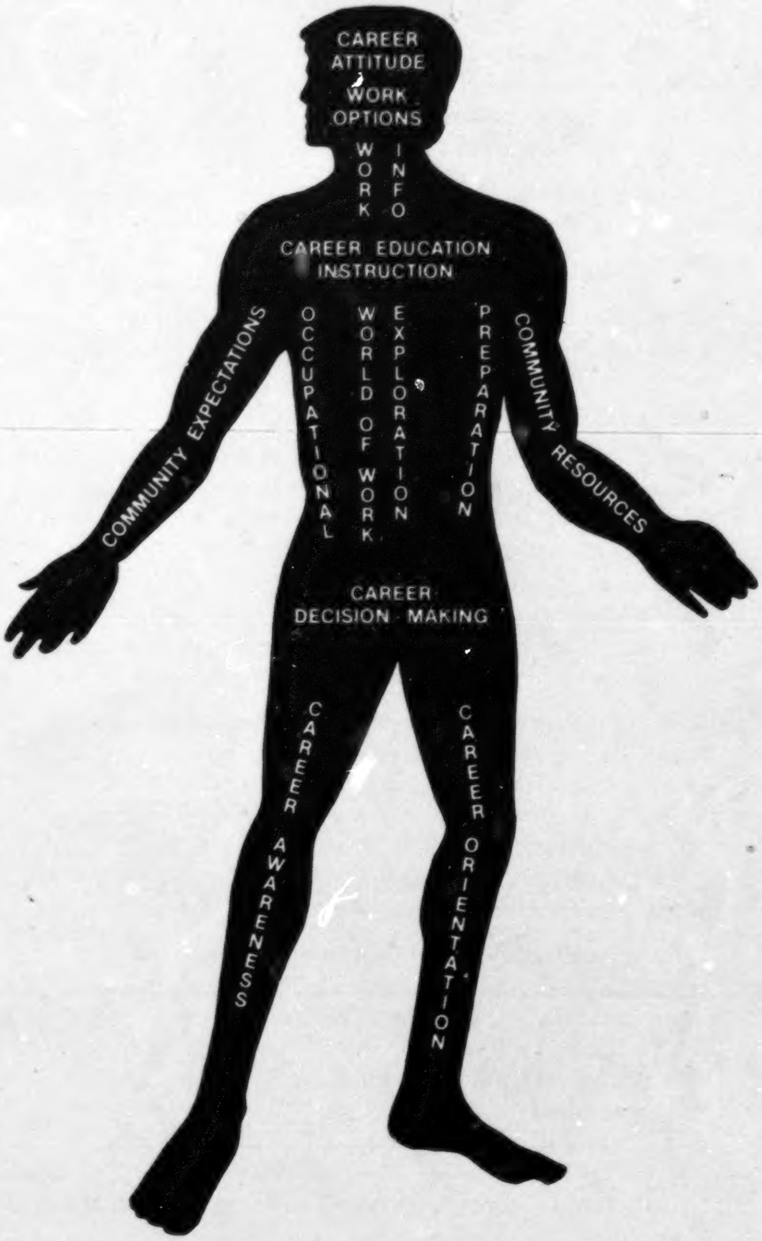
The most commonly observed perspective used to organize career clusters has been that of the **Preparation** level. It tends to represent present occupational practice within that community and "what we can do for learners here and now with the resources at hand." It is usually presented to the public and the learner as being the practical and realistic approach to locally meeting the emerging needs of career education. An unstated assumption appears to be that the learner will become and remain a worker in that community.

If the **Preparation** level perspective is not used to organize career clusters and programs, the state or local education agency has most likely turned to a career **Awareness** elementary school level approach. Elementary school curricula have not traditionally focused upon information that was occupationally relevant to the careers that learners may some day experience. Within most communities, however, educational practice has related understandings involving the citizen, family, and/or leisure role aspects of careers to ongoing educational activity. Career education can, therefore, be initiated by the redesign of ongoing educational practice to include relevant occupational role information.

Realizing that this response does not accurately represent all of the world of work, it is easy for elementary level educators to turn to "careers" experts within the local school system for assistance in developing career clusters. The result of this approach is to add additional occupations for which occupational education exists within the community. A final addition might be the result of forming a local advisory committee that would suggest including occupations represented in the local community even though occupational education occurred elsewhere.

The **Exploration** level approach to organizing career clusters is not usually selected by state or local education agencies. It may be that existing elementary and occupational education programs appear to be more easily adapted to fit the general understanding of career education. Another reason is that the career **Exploration** level alternative requires the breaking of new ground. Little information is available or organized for occupational guidance use at the junior and senior high school levels, other than that concerning "going on to college." Prevailing practice provides little experience or effective procedures for rational and career relevant decision-making concerning enrollment in junior and senior high school curriculum offerings.

CAREER EDUCATION SYSTEM


CAREER ATTITUDE
WORK OPTIONS
WORK
INFO
CAREER EDUCATION INSTRUCTION
COMMUNITY EXPECTATIONS
OCCUPATIONAL
WORLD OF WORK
EXPLORATION
PREPARATION
COMMUNITY RESOURCES
CAREER DECISION MAKING
CAREER AWARENESS
CAREER ORIENTATION

CAREER EDUCATION AND CLUSTERS: RECOMMENDATIONS

Evaluation of emerging career education practice clearly reveals three recommendations that have nationwide priority:

1. Career education must be functional **without** massive additional federal, state or local funding.
2. Career clusters must be organized to effectively represent **Exploration** level learning activities and thereby bridge the gap between existing career **Awareness** and career **Preparation** programs.
3. Career education programs, and clusters in particular, must be understandable by the persons upon whom they have greatest impact, i.e., learners, parents, local and state education agency staff and career education concerned persons within the community.

Upon this basis the CMO cluster project rejected the original assumptions made concerning the readiness of staff and students to enter into career education programs. The project staff then began to search for current procedures and materials that would reduce time needed to implement a career education system and meet the priorities described above. A skeletal outline of the elements composing such a career education system can be reviewed on the opposite page.

A need exists for a career decision-making process that will allow learners to share in rational decision-making concerning the occupational **Preparation** that will contribute to their careers. It is this process that will facilitate the delivery of career education.

CAREER EDUCATION AND CLUSTERS — THE TOTAL SYSTEM

Recommendations require that a career education-committed community develop and maintain both vertical and horizontal articulation of the K-12 program. A primary strategy to accomplish this is to initiate career education curriculum development. The material that follows outlines general procedures to be used. The material may be reproduced for general distribution to local personnel holding advisory committee leadership responsibility.

DEVELOPING ADVISORY COMMITTEES AS A BASIS FOR CAREER EDUCATION CURRICULUM DEVELOPMENT

What is this activity?

This activity will introduce you to career education lay advisory committees as a foundation for program and curriculum development.

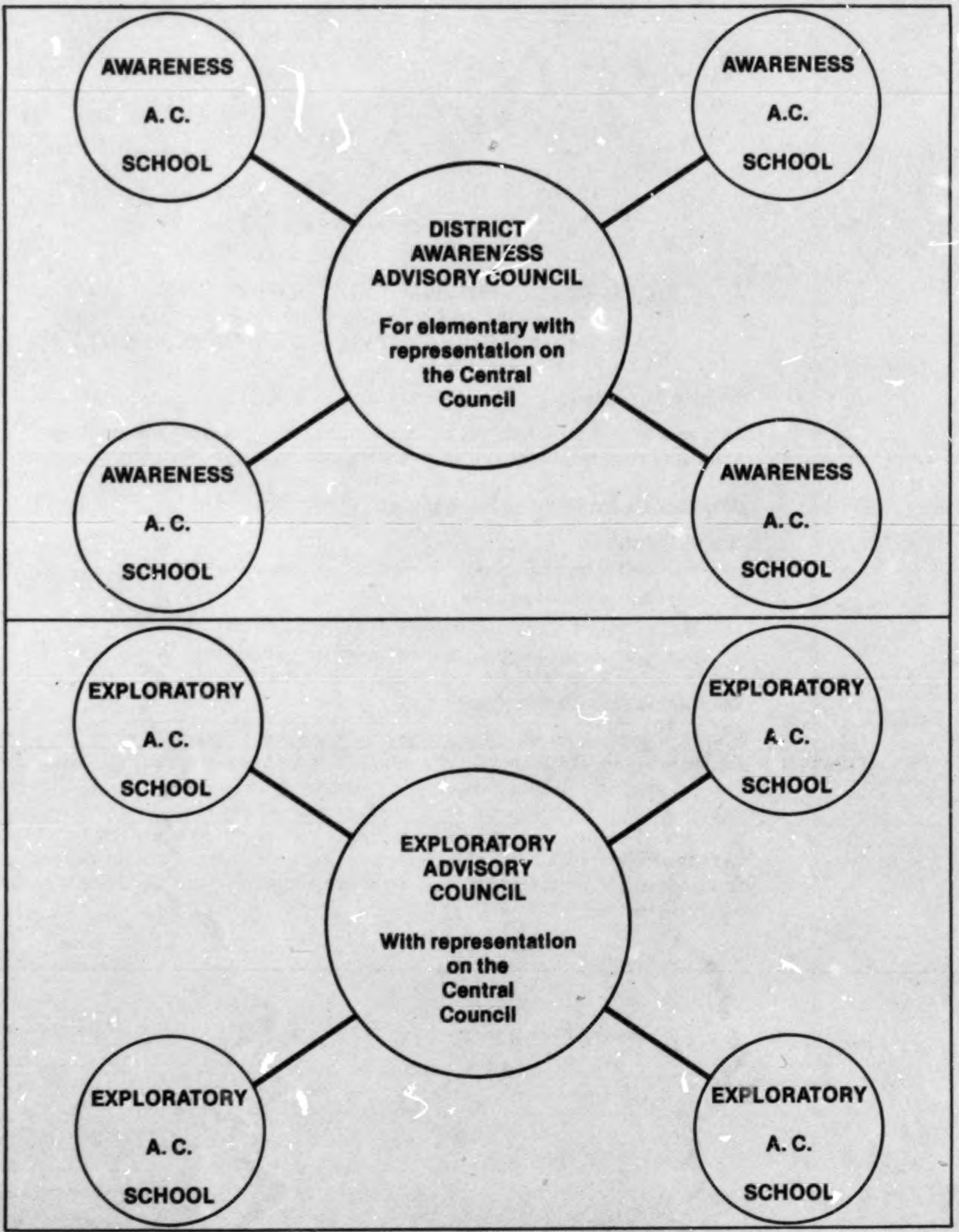
What will I learn from studying this activity?

You will be able to:

1. Identify the ingredients of a "good advisory committee."
2. Explain the role of an advisory council.
3. Differentiate between the various types of committees.
4. Use recommended steps in organizing advisory committees.

Why is this activity important?

Prior to initiating curriculum development, one should consider if there is a need for the program: (1). What type of curriculum should be developed? (2). To design relevant programs of career education, they must be an integral part of the community in which they exist and must reflect the day-to-day occupational life of the community. If this reflection is to be accurate, close cooperation between the school and those in the work force of the area is essential. (3). One of the most effective formal means of providing for this type of cooperation is the career education advisory committee.


AWARENESS
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DISTRICT AWARENESS ADVISORY COUNCIL
For elementary with representation on the Central Council
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EXPLORATORY ADVISORY COUNCIL
With representation on the Central Council
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INGREDIENTS FOR A GOOD ADVISORY COMMITTEE

1. **Need** — Do you have a clear cut purpose for establishing a committee?
2. **Well-Balanced Membership** — Dedicated members, good cross-section of community.
3. **Active Involvement** — Doing things instead of listening to education reports.
4. **Planned Meetings** — When needed, good agendas.
5. **Communication** — Members, teachers, administration, board and community.

ROLE OF ADVISORY COMMITTEE

1. Provide direction to curriculum development to insure relevance to the world of work.
2. Supply technical information when needed.
3. Serve as a "sounding board" for community sentiment.
4. Provide public relations for programs in community.
5. Lend validity to proposals for new and expanded programs.
6. Increase teacher confidence in moves toward program improvement.
7. Assist in development of work experience program.
8. Serve as a team for assessment and evaluation of career education programs.
9. Assist with activities of youth organizations.
10. Review and revise career education budget and make recommendations to school administration.

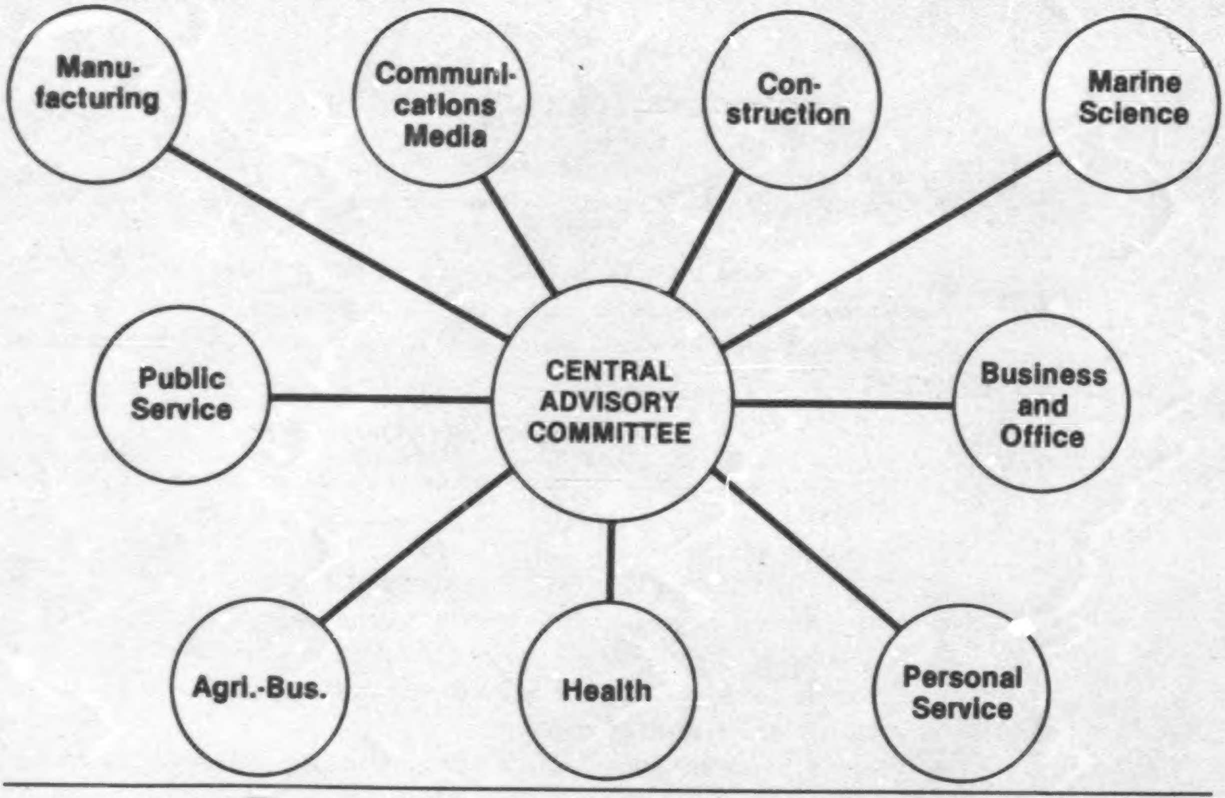
VARIOUS TYPES OF COMMITTEES

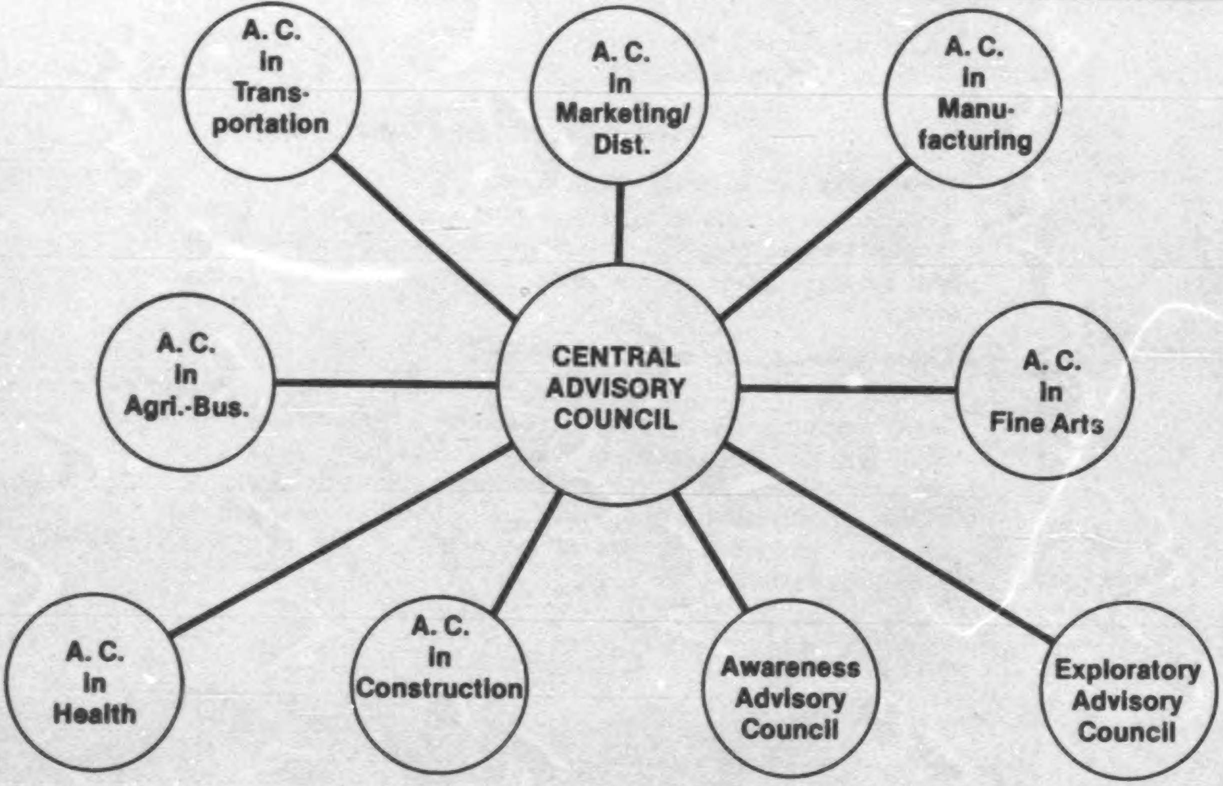
Awareness Lay Advisory Committee:

Composed of persons representative of the community that advise on elementary career awareness programs. Usually one committee per school. The committee in each school may be a sub-committee of the Parent-Teacher Association or similar groups.

Exploratory Lay Advisory Committee:

Selected representative members of the community that advise on exploratory career programs. (Could include representatives from employment agencies, vocational rehabilitation, vocational directors, communities parent-teacher groups, the community college, etc.). One committee per school or district depending on administrative structure. The individual committees that are established may be sub-committees of the PTA or they may be established specifically for occupational exploration programs


Manufacturing
Communications Media
Construction
Marine Science
Public Service
CENTRAL ADVISORY COMMITTEE
Business and Office
Agri.-Bus.
Health
Personal Service


A. C. in Transportation
A. C. in Marketing/Dist.
A. C. in Manufacturing
A. C. in Agri.-Bus.
CENTRAL ADVISORY COUNCIL
A. C. in Fine Arts
A. C. in Health
A. C. in Construction
Awareness Advisory Council
Exploratory Advisory Council

Cluster Lay Advisory Committee:

A broad cross-section committee, selected from labor and management representing the primary occupations of a specific cluster area. Usually one committee for each cluster program. The individual committees perform similar functions within cluster areas.

Community College Lay Advisory Committee:

A cross-section committee selected from labor and management, representing specific business or trade areas. Usually one committee for each specialty, occupation or trade.

Individuals with competencies in the specific vocational area should be recruited for the advisory committee. Frequently secondary cluster committee members are included to help develop better program articulation. The Chairman or an appointed representative should serve on the central council. The central council could also include representatives from anticipated vocational areas and a representative from the various high school committees.

Combined Lay Advisory Committee:
(For Smaller Sized Schools)

A cross-section representing each occupational program in the district. In many communities it may be impractical to have more than one committee. In such cases a single committee with a broad representation can provide a valuable assist.

Central Advisory Council:

A Central Council is composed of representatives from career advisory and cluster advisory committees (A.C.) in the district. This committee should have dual responsibilities as a liaison between the communities' committees and in a steering capacity.

The Central Advisory Council is composed of representatives from the awareness and exploratory councils as well as each cluster committee presently in operation and those projected in the long-range plan. The primary function of the central council revolves around total program planning, in-service recommendations and coordinating between programs and grade levels. Representatives on the central committee may be the chairman from the individual committees or that chairman may appoint a representative from the committee.

Ad Hoc Advisory Committee:

A committee that has been established for a specific purpose and when that purpose is completed, the committee is dissolved. (Examples of use: Review of the long-range plan, planning and setting up a new cluster program, etc.)

RECOMMENDED STEPS IN ORGANIZATION OF ADVISORY COUNCILS AND COMMITTEES

1. Develop a list of potential members — (12-15 people that provide a good cross-section of the community). Also ask a school board member to serve in a non-voting capacity for opening a good communication link with the board.
2. Talk to the individuals on a person-to-person basis: a) to determine interest in program, b) to determine willingness to serve on committee.
3. Review and refine list down to final committee plus two or three spares — (7-9 members constitute a workable size committee).
4. Present the list to your superintendent. Have superintendent eliminate to final list.
5. Have superintendent present finalized list to school board for their approval.
6. Call organization meeting.
   - Review need for organizing council or committee.
   - Develop a schedule for meetings.
   - Tour facilities and explain present program on a positive factual basis. Beware of gripes about the things you don't have or the way you are being treated. Show enthusiasm for improving program — starting with what you have.
7. Develop a set of rules for operating committee — (constitution).
8. Call an additional meeting for:
   - Developing a full year's list of agenda items.
   - Approving the constitution.
   - Developing a 5-year plan of action for upgrading department.
9. Regular meetings (at least every other month)
   - To carry out plans in agenda and program of work.
   - To handle unscheduled activities and problems of the department.
10. Calling meetings.
    - Prior discussion with chairman on need for meeting.
    - With chairman's help, develop an agenda for meeting.
    - Have secretary type letters (personalized) inviting members to meeting. Include a copy of the agenda so that members can think about items in advance.
    - Call meetings at least one week in advance.
    - Send each member a copy of minutes after the meeting. Also school administrators should be sent a copy.

11. Conducting a meeting.
    - Be lively, be honest, be sincere, be positive.
    - Allow chairman to conduct meeting.
    - Instructor acts as recording secretary.
    - Instructor should keep talk to a minimum.
    - Involve members in worthwhile activities.
    - Avoid making committee into rubber stamp group.
    - Provide coffee and cookies.
    - Appear grateful and accept advice given by committee.
    - Take every opportunity to show successful implementation of committee's advice.
    - Refrain from introducing controversial subjects or uncomplimentary comments about school, staff or community.
    - Accept members as partners in developing a better career ed program.
    - Keep partners well-informed about program — Communicate.
    - Be tactful with proposals involving money.

OTHER SOURCES OF INFORMATION

1. Franklin R. Johnson, "An Analysis of Methods and Techniques Practiced in Utilizing the Services of Lay Curriculum Advisory Committees" (unpublished Ed. D. dissertation, Graduate School, U.C.L.A., 1969), p. 2.
2. For a discussion of state advisory councils, see Samuel M. Burt, **The State Advisory Councils on Vocational Education** (Washington, D. C.: The W.E. Upjohn Institute for Employment Research, 1101 17th Street, N.W., 1969). Individual copies free upon request.
3. E.I. Lehrmann, "Procedures for Effective Use of Advisory Committees," Final Report, **National Leadership Development Seminar for State Directors** of Vocational Education, March, 1968, p. 109 (in American Vocational Association files).
4. Advisory Committees in Career Education: A publication of the Career Education Section — Oregon State Department of Education, 942 Lancaster Dr. NE, Salem, Oregon 97310.

AVAILABLE SUPPORT SYSTEMS

The following describes presently available support systems that can provide the skeletal elements of a functional career education system. Each of the elements have been developed in the real world of schools or work. Together they represent the expenditure of millions of dollars of private and public funds, and many years of human effort.

In most instances the processes and procedures were not developed in the name of career education. The CMO cluster project has demonstrated that cooperating field test sites and other career education-committed educators see these elements as facilitating the delivery of career education in their state and local setting.

The use of these systems assumes that the user has career education-relevant instruction functioning at the occupational Preparation level. If other skeletal elements of the career education model have been developed locally, they can be utilized in an adaptive manner as part of a functional system or replaced with the support system described.

The project staff and the developer/researchers concur that:

> The task at hand is to provide career educators access to currently available, career relevant, **user meaningful** information and learning activities, that are available TODAY to facilitate the delivery of career education at the state and local levels.

Career educators interested in further information concerning these support systems should contact the developer/researcher listed.

AFFECTIVE ACCOUNTABILITY AND PROGRAM EVALUATION

Developed by
Dr. Albert R. Wight

There is a growing recognition in education of the responsibility for affective growth and development of students, as well as cognitive, academic learning. Such goals as positive self-concept, self-direction, responsibility, concern for others, respect for others' rights and property, love of learning, etc., are usually among the highest priority goals, yet few educators feel that they are given adequate treatment in our schools.

It has become quite evident that affective goals cannot be treated as an add-on to the curriculum, an hour a day or week devoted to affective concerns. They must be integrated into the curriculum as conscious, deliberate by-products of all management, teaching, and learning activities. This requires reexamination on the part of most schools of the total program, and the establishment of a fundamental philosophy within which a more comprehensive approach to education can be developed. A program has been developed to assist a school staff in this effort. It includes structured activities that facilitate:

- Reassessing purpose and direction in education, identifying affective goals and priorities, defining affective objectives
- Identifying conditions expected to facilitate or inhibit achievement of affective objectives
- Improving staff communication; arriving at a consistent, unifying philosophy and methodology
- Examining affective measurement and assessment methods and techniques
- Identifying implied or desired changes
- Formulating action plans for implementation and follow-through

To make this program available to a greater number of schools a workshop has been designed to train facilitators from school districts, state departments of education, and colleges of education to conduct inservice training and follow-up work in affective accountability in the schools. In addition to becoming thoroughly familiar with the affective accountability program and confident in their ability to conduct it with school staffs, prospective facilitators will acquire skills and understanding that will be invaluable in designing and conducting any inservice training or staff development program. Facilitators will receive instruction in:

- The participative, experiential training philosophy and methodology
- Training design involving individual work, small groups and large groups
- Instrumented training
- Design and sequencing of activities
- Strategies for achieving participant involvement and responsibility
- Anticipating and dealing with problems of change

Persons desiring additional information should contact:

Dr. Albert R. Wight
1429 South 2100 East
Salt Lake City, UT 84108

or

ISIS
2710 N.W. Mulkey
Corvallis, OR 97330

CAREER INFORMATION SYSTEM

Developed by
Appalachia Educational Laboratory
David Winefordner
Project Director

A career information system for accessing varied forms of occupational information commonly found in a career resource center. This learner/user approach to exploring occupations was developed by the Appalachia Educational Laboratory, Career Information System staff under the direction of Dave Winefordner.

Based on the Department of Labor's **Dictionary of Occupational Titles**, the materials are organized around the DOT Worker Trait Groups which have been rewritten in easy-to-understand language for use by students. All occupational information is indexed and filed by Worker Trait Group with a variety of user-identified indicators to explore an occupation or a family of occupations with similar worker characteristics.

Indexes which utilize a number of commercially available occupational briefs, multimedia material, the **Occupational Outlook Handbook, Encyclopedia of Careers** and the VIEW system are incorporated into the filing system. Students using the AEL/CIS need little instruction to be able to access relevant information regarding their personal choice or alternatives to explore as career options.

Although the target audience is secondary school students, the CIS can be set up and operated in a variety of other settings such as colleges, employment service offices and libraries. It is designed to be compatible with career education programs, most of which use some type of occupational information filing system. Program designs and accessing techniques which have been built around a particular type of filing system structure would not have to be dismantled or changed in order to use the AEL Career Information System. This linking of filing systems provides for using the best aspects of both.

Field testing of the System was initiated during school year 1973-74 and focused upon the installation process. During school year 1974-75, the System's utilization and impact will be evaluated, and materials will become generally available in January 1977 through McKnight Publishing Co., Bloomington, IL.

The cost of installing the System will vary with the amount of materials already available in a particular setting, such as equipment (vertical file, alphabetical card file, etc.) and occupational information materials (looseleaf occupational briefs, **Occupational Outlook Handbooks, Encyclopedia of Careers, Dictionary of Occupational Titles**, etc.) The estimated cost for multicopies of the CIS Guides, Indexes and Keysort cards would be $400 to $500. This includes a counselor-teacher-student orientation package and a **Guide** for setting up and operating the filing and indexing system. This start-up package would be sufficient for use with classroom size groups in addition to serving as basic reference materials for use within a school building.

The cost of operating the System will also vary according to the number of students using the variety of checklists and other inexpensive access materials. The cost of maintaining the System will depend upon the amount and type of occupational information materials added, but this should be no more than the cost of maintaining existing systems.

Persons desiring information as to the commercial source of the CIS should contact:
McKnight Publishing Company
Bloomington, IL 61701

COMMUNITY EXPECTATIONS FOR STUDENT SKILLS

Developed by
AT&T
Donald U. Honicky
Supervisor

In early 1970 the American Telephone and Telegraph Company and the Ohio Bell Telephone Company entered into a contract with the Battelle Memorial Institute in Columbus, Ohio to develop a method for determining what a broad cross section of the community felt a public school system should be teaching students. This project was named Community Expectations for Student Skills.

In the late 1960's (and continuing to today) it was recognized that high school graduates were entering the world of work without the ability to read, write, compute or otherwise function to a sufficient degree. Additionally, many communities were voting down various money issues for school support and some communities found that school doors were locked because the district had run out of money.

It seemed rather obvious that the school system was not communicating properly with its constituency. Over the years the public had determined that the schools were doing a good enough job and community controls were loosened to the point of noninvolvement. Suddenly, parents, students and employers were asking whether the schools were doing the kind of job that they were meant to and whether or not they should have closer supervision from the outside. This took the form of various interest groups, parents committees or community advisory boards that more often than not turned into an adversary group against the administration and teachers.

The purpose of this project was to find a way to organize the broad community (parents, teachers, students, businessmen and administrators) in such a way that they were not antagonists but partners in determining what the schools should be doing. It has been increasingly recognized that schools should not only be teaching those things necessary to move from one grade to the next or to meet the requirements for matriculation, but should also be teaching students the skills of living that often are vitally important. The Community Expectations process recognizes that the following elements must exist before such a cooperative effort is successful:

1. The goal of the process should be to work together to determine what should be done — not find fault with the existing curriculum.
2. The school system must be willing to make this their major activity for the period of the project and must publicly commit time, personnel and effort to the project.
3. The participants must all be trained to deal with the process of specifying skills in the same manner. They must be able to focus their efforts on skills in such a way that they avoid drifting into other areas of concern and so that the product is acceptable and useful to the schools.
4. The school board and the administration must be willing to respond to the work done by the broad community in such a way that the present curriculum will be analyzed for the existence of the skills desired by the community and so that skills not being taught will be woven into the curriculum where feasible.

The process includes thorough instructions for the school system and school board in suggested ways to make the necessary public commitments for the credibility necessary for success. It lays out through the use of organizational tables, manuals for the project director and superintendent, activity timetables, etc., the way to organize both the community and the school system for the project. There is a thorough training manual that enables a head trainer to train a small cadre of people in the process and in the rudiments of nonconfrontative group discussion methods. The manual then permits the cadre of trainers to train larger groups of volunteers who will conduct meetings throughout the community comprised of large numbers of volunteers from the various groups mentioned above.

The project director is given suggestions on how to obtain the community volunteers, the group leaders and the trainers. There are also recommendations for various community meetings to introduce the project initially as well as report back the results of the group efforts and explain what the school system will do with the data.

The process was initially designed in Columbus, Ohio and has been thoroughly field tested in Lancaster, Pennsylvania under the auspices of the State Department of Education; in Woodbridge, New Jersey and in Beaverton, Oregon, again under the auspices and with the cooperation of the State Department of Education.

These materials are presently scheduled for release in 1976.
Request for additional information should be made to:
Donald U. Honicky
Supervisor Educational Relations
American Telephone and Telegraph Co.
195 Broadway
New York, N.Y. 10007

COMMUNITY RESOURCES FOR CAREER EDUCATION

Developed by
Carl N. Poole

The Problem

As local school districts perfect the development and implementation of career education activities and programs at the Awareness (K-6), Exploration (7-10) and Preparation (11-12) levels, the variety and volume of community resources required to support the "hands-on" and experiental components of these programs is increasing at a rapid rate.

Districtwide implementation of career education models and pilot projects introduces an ever-increasing number of classroom teachers, counselors and work experience coordinators to the requirement to identify, select, plan for, secure, utilize and evaluate community resources as educational tools to assist students to achieve career education instructional goals.

This increasing requirement for community resources by classroom teachers, counselors and work experience coordinators, could result in excessive competition between individual schools and teachers for the more accessible and cooperative community organizations and individuals. The vieing of several educational components for the same resources could rapidly lead to the overtaxing and abuse of otherwise willing and cooperative organizations, with a resultant disaffection among business, governmental and labor organizations.

The utilization of community organizations and individuals in the educational process imposes three major obligations and responsibilities upon school administrators and curriculum planners. The extent to which these three responsibilities are met will determine in large measure the degree to which educators retain the enthusiastic participation and support of the business-governmental-labor sectors of their communities.

The three major obligations and responsibilities educators face are:

1. Assure that curriculum planners recommend the use of community resources only when they represent the best or only tool or method for achieving the desired instructional goal.
2. Assure that school personnel are trained in the proper utilization of community resources, and that community personnel are trained to effectively fulfill their role as participants in the educational process.
3. Assure that an efficient and economical system is established and implemented to facilitate the recruitment and coordination of community resources to equitably meet the needs of all school systems and students.

The following workshop units are designed to train and prepare local, intermediate and state school system administrators to plan, organize and implement programs which fulfill education's responsibilities and obligations to their communities.

Workshop Outline

Unit 1 — Role of Community Resources in a Career Education Curriculum
Unit 2 — Career Education From the Community's Viewpoint
Unit 3 — Recruitment and Coordination of Community Resources
Unit 4 — Personnel Development
Unit 5 — Program Documentation, Evaluation and Revision

The workshops were initially developed and field tested as dissemination/support components for a locally adaptable, transportable community resource delivery system which local school districts can use to fill their needs for community resources. The initial field test was conducted in cooperation with the Institute for Public Affairs Research, Inc. (IPAR), from February, 1972, until April, 1974. The employer resource inventory program, data bank, and scheduling center which was established, now serves the fifty-seven school districts and 180,000 students in the Portland, (Oregon) metropolitan area.

The Anchorage (Alaska) Borough School District has entered into a contract to design and install a community resource delivery system in the Anchorage metropolitan area. A similar system is currently under development to serve the needs of a number of school districts in Lane County — Eugene/Springfield metropolitan area — of Oregon.

Persons desiring additional information should contact:
Carl N. Poole, Suite G
10628 N.E. Wygant
Portland, Oregon 97220

OCCUPATIONAL EMPLOYMENT STATISTICS (OES) PROGRAM

Developed by
DOL/OED
Tom Lynch
Coordinator

The Research Section of the Oregon Employment Division (OED) is currently involved with the Department of Labor in the development of the Occupational Employment Statistics/Industry-Occupational Matrix program. This program currently involves 29 states with OED in a leadership role. The OES Program is a federal/state cooperative system designed to collect occupational employment statistics on a recurring basis. The need for this type of system is generated by the ever-increasing demand by educational planners, manpower analysts, economists, etc. for reliable current estimates of employment by occupation. The purpose of the OES program is to assist those states that are apparently producing or will produce occupational employment/manpower projections to use a consistent set of occupational classifications, projections and sampling techniques so that national to state, state to state and state to area manpower comparisons can be made in an effective manner.

The 29 OES states are:

AL
AK
CO
DEL
DC
FL
GA
IN
KY
ME
MD
MA
MN
MS
MO
NV
NJ
NY
NC
OK
OR
PA
SC
TN
TX
UT
VA
WV
WI

The OES program system will be completely computerized and involve a merger of the Dictionary of Occupational Titles and the Census Occupational Classification coding systems into the Bureau of Labor Statistics Industry-Occupational Matrix (IOM) program. The intent of the OES program is to provide more specific occupational detail within the I-O Matrix program by using the Census classification as major occupational groups. The system will provide user states an annual update with five and ten-year projections of expansion replacement needs for each OES occupational title. The approximately 2,500-3,000 OES titles will form the nucleus of the new 4th Edition (1976) of the **Dictionary of Occupational Titles**, and the 1980 Census data will be available in this format.

Currently, there are three manpower information systems in Oregon which depend heavily on OES estimates and projections. A brief description of each follows:

1. **Systems Exploration and Research for Career Help (SEARCH)**, Oregon State Employment Division. The major emphasis of this program is to relate student and worker aptitudes and interests to occupational career choice through general aptitude tests and occupational information.
2. **Career Program Planning System (CPPS)**, Oregon Board of Education. This program is used as a means of delivering occupational manpower demand data to state and local educational planners for the development of educational programs and curriculum guides.
3. The USOE **Communications Media Occupations Cluster Guideline Project** using the World-of-Work (WOW) function concept for clustering occupations for career exploration.

The above three systems described are presently computer compatible and could utilize the Career Information System developed by the Appalachia Educational Laboratory to effectively utilize OES manpower data in a single school or within a local, state or national system setting.

Persons interested in the level of implementation of the OES system in their state should contact Tom Lynch for OES information in general and the names of persons knowledgeable about the progress of OES in their locality:

Tom Lynch Coordinator
OES Project
Oregon Employment Division
875 Union Street N.E.
Salem, Oregon 97310

SEARCH
SYSTEMS EXPLORATION AND RESEARCH FOR CAREER HELP

Developed by
Oregon Employment Division
Paul Kerr
Supervisor

SEARCH (Systems Exploration and Research for Career Help) is a systems approach to the effective use of Employment Service (ES) counselor-related tools, information and methodology. Its objective is to help Employment Service clients make occupational decisions that will offer them the greatest success in job matching and placement. Two of the Employment Service's assessment devices, the Interest Check List (ICL) and the General Aptitude Test Battery (GATB), are combined to provide a meaningful interpretation that allows the client (student/learner):

1. To make rational, quality occupational decisions.
2. To examine courses of action to attain goals.
3. To look at job requirements in terms of consequences to the individual relative to self-concept and the related life roles to be lived.

The result is improved occupational counseling with more permanent placement.

SEARCH is the only complete occupational counseling system which effectively utilizes **all** ES counseling and guidance tools. It is free from bias in sex, race and age. It uses formal validation as well as continual client self-validation. It brings the Worker Trait Groups (WTGs) into the counseling program where they belong. It greatly improves the counseling use of the GATB and the ICL. It is designed to accept all pertinent occupational and labor market information, including that of the DOL Occupational Employment Statistic Project that will soon be functional in all states.

SEARCH in Non-Employment Security Agency Settings

SEARCH is a rational method of career study enabling students to make occupational exploration discoveries about their individual likes and aptitudes. **SEARCH** is based upon the results of validated standardized test results. **SEARCH** does not dictate or define the **only** occupational choice to the student, but rather gives a number of alternatives based on the individual's results of likes and aptitudes. These alternatives are to be explored by the student with a minimum of counselor or outside influence.

SEARCH makes use of three kinds of assessment. First, there is the General Aptitude Test Battery (GATB). Because of its extensive research base, the GATB is acknowledged as the best multiple aptitude test for occupational guidance. Then there is the Interest Check List (ICL) for 173 work statements. The ICL samples the student's interests in wide areas of work ranging from the professional to the unskilled. In addition to the GATB and ICL, the Worker Trait Groups (WTGs) in the Dictionary of Occupational Titles, Vol. II, are added. Each WTG includes occupations grouped according to job requirements. The GATB, ICL and WTGs combine to produce sound occupational guidance information.

Groups of students are introduced to **SEARCH** by certified interpreters. Students are actively involved with the most interesting of all subjects — themselves and their future. By the use of **SEARCH**, the student finds jobs that can be rationally analyzed in terms of Data, People and Things, Training, Aptitudes, Interests, Temperaments and Physical Demands. In the analysis of these various requirements, students can compare their individual likes and aptitudes to a variety of occupational areas and jobs suited to the individual's potential. **SEARCH** presents this information to the student in two computer printouts that synthesize the results of two measurement devices — the US Employment Service Interest Check List (ICL) and the General Aptitude Test Battery (GATB). Duplicate computer printouts — one copy to the student; one copy to the guidance department — allows the student to consult with parents, school guidance personnel, peers and job holders as to the decisions necessary to acquire the skills and knowledge to successfully perform in selected occupational settings. Students using this proven, easy-to-use format soon learn to use this information in an independent manner.

SEARCH does not dictate to the student the occupation to exclusively consider, but rather offers rational choices. Perhaps for the first time in the student's life, the individual is in position to truly share in control of making important personal career choices. No occupation is given any value judgment labels. Students have information about themselves and possible occupations to weigh the value of training for potential long- and short-term occupational objectives. The student's self-concept and worth are given a solid foundation for inward examination.

After examining possible occupations, the student looks at related occupational guides, pamphlets and other literature. **SEARCH** is compatible with **any** career information system based on the Department of Labor's **Dictionary of Occupational Titles** (DOT), e.g., the recently developed Career Information System of the Appalachia Educational Laboratory, National Institute of Education. It is cost-effective — about 97c in expendable materials — produces computer scoring and printouts of results of the ICL and GATB for each individual student.

Further training and job-finding may be discussed with school counselors or other interested persons. The students may consider work in those occupations where they can do a good job and where there will be a demand for the individual's training, abilities and interests.

SEARCH enables the counselor to assist students to: (1) make good occupational decisions, (2) examine a number of courses of action and (3) look at job requirements in terms of their consequences to himself/herself.

The student learns not to just make decisions but to make quality decisions; learns about himself/herself; likes and dislikes; what can be adjusted to; and potential abilities. These likes and abilities are examined to give the student a better chance for job success.

SEARCH is adaptable. It fits into any career development program. **SEARCH** can be used at the 9th and 10th grade levels. It is very effective at the 12th grade and at the college freshman and adult levels. **SEARCH** allows the counselor's time to be more effectively used in career exploration. Students initially work in large groups rather than in expensive counselor-student settings. Later, smaller groups of students come together to work as long as they wish. If individual counseling becomes necessary, the counselor now has solid facts available to help the student work towards a more effective career choice.

SEARCH draws on the student's past experiences in and out of school. The system leads to further extensive exploration and frequent decision-making. Above all, it is a process of the student learning about himself/herself as he/she examines the world of work.

Dissemination to Non-Employment Service Agencies

Oregon Employment Division (OED) is currently cooperating with an Oregon nonprofit corporation — Innovating Systems Implementation Service, Inc. (ISIS) — to respond to the request for training and utilization of **SEARCH** in non-ES settings in other states. The ISIS group will cooperate with the OED to adapt the SEARCH program and materials to more effectively meet the needs of educational personnel and clients in non-ES settings.

Quality control will be maintained by ISIS through a cooperatively developed training program to certify persons to administer the instruments and interpret the results. Use of OED copyrighted **SEARCH** materials for use and/or training purposes will be limited to OED/ISIS certified personnel only.

ISIS is the **sole training group currently available** to disseminate and provide training for administration/interpretation of the Oregon Employment Division **SEARCH** program outside the state of Oregon. The ISIS staff is currently engaged in a cooperative research/development effort with the Oregon Employment Division to produce a **SEARCH** printout that will indicate the USOE career clusters relevant to a learner's interest/aptitudes. Systematic definition of the occupations included within the USOE career cluster scheme is accomplished via application of the world-of-work (WOW) function process initially designed/developed, by Dr. W. Lee Foust, Jr.

The WOW function cluster system was selected and applied to define those occupations from the Department of Labor's **Dictionary of Occupational Titles** (DOT, Third Edition) that make up the USOE Communications Media Occupations (CMO) career cluster. To date, this is the only systematic approach known to have been made to apply the procedure selected to define **one** USOE career cluster to the definition of the occupational content of **all** the USOE career clusters.

Persons interested in additional information concerning the use of SEARCH in non-employment security settings should contact:

Dr. Martin D. Singkofer
ISIS
2710 N.W. Mulkey
Corvallis, Oregon 97330

SELECTING CAREER EDUCATION INSTRUCTION COMPONENTS: A PROBLEM-SOLVING APPROACH

Developed by
Dr. Delbert W. Shirley

The efficient use of scarce resources — teacher and student time, taxpayers' money, etc. — is dependent on cost-effective decision-making. Specific training for skill development in decision-making is usually lacking in elementary through graduate school programs. When students are asked the procedures for solving problems, they commonly list five to seven steps but do not know how to apply the strategies for achieving those **memorized** steps.

This approach to selecting career education instruction components is designed to interface with the **Career Education Development Model: Learner Outcomes, Strategies and Activities**. It assumes competency in relation to **Affective Accountability and Program Evaluation** (Dr. Albert R. Wight) and knowledge of all skeletal components of the Career Education System model.

The instruction provided builds on material from **A Guide for Decision-Making** developed as an aid for helping people in organizations learn how to do more effective planning. It is based on the rationale that a plan to accomplish change from "what now is" to "what is desired" has more chance of being successful:

1. If the plan is seen as the best of all possible alternatives.
2. If all possible trouble spots in carrying out the plan have been identified and plans made to deal with them effectively.

The Guide and methodology have been repeatedly successful in voluntary organizations and were used, all or in part, in the USOE Communications Media Occupations Cluster Project. They provide a clear step-by-step description of processes used and alternatives considered when individual planning must be communicated to a group or others on an individual basis.

The Guide contains procedures for:

1. Determining if the problem is a functional or a people problem, or both. Functional problems deal primarily with equipment and systems which are inadequate or malfunctioning; people problems deal primarily with behavior of individuals or groups of individuals.
2. Classifying the problem into three categories:
   a. Where the initial problem deals with values and what the goals or objectives should be.
   b. Where the problem is to test or prove an idea or theory.
   c. Where the outcome is known but the problem is how to achieve it.

   Each of these problems requires a different approach — negotiation, action research, systems analysis.
3. Selecting from among alternatives:
   a. When minimum essential criteria must be met.
   b. When scarce resources require the "best of alternatives" to be chosen.
4. Anticipating and planning for possible implementation strategies when an alternative has been selected.

Extensive use is made of worksheets to aid the planning process. Currently, these are designed to be used in training sessions where the facilitator leads the trainees through an experience-based process using their own problems. The material is readily adaptable for individualized instruction by adding interactive components and examples for illustration of key points.

The above described materials and processes, as well as currently emerging innovations that will be incorporated, will result in the design/development/implementation of an instructional program — "workshop" — that will train participants to select career education instructional program components that will function in the state or local education agency setting where they are to be employed.

Further information can be obtained by contacting:

Dr. Delbert W. Shirley
ISIS
2710 N.W. Mulkey
Corvallis, Oregon 97330

WORLD OF WORK (WOW) FUNCTIONS AND CLUSTERS IN CAREER EDUCATION

Developed by
Dr. W. Lee Foust, Jr.

Review of ongoing "career education" and "career cluster" efforts suggests that many educators do not yet realize that career education and a facilitating cluster scheme must be designed to assist learners to explore the world of work **outside** the school walls —NOT to explore just those occupational preparation programs — vocational, technical, and/or professional — that exist **within**.

Development of the world of work (WOW) function approach to clustering occupations for career Exploration was undertaken because a tested procedure for providing meaningful occupational content of career clusters that meets the U.S. Office of Education (USOE) and "facilitates the delivery of career education", was NOT available.

There is much controversy as to "the design and organization of clusters" that meet the stated goal. The world-of-work function approach is not the "one and only answer" to designing and organizing a cluster scheme that will "facilitate the delivery of career education." This approach was designed to assign occupations to a cluster scheme representing all the world-of-work and applied to the USOE Communications Media Occupations career cluster Guideline development effort. It does allow the learner to explore the world of work in a manner that transcends commitment to a particular occupational preparation perspective. It thereby prepares the learner to select more freely the occupational preparation program — vocational, technical, professional — that is seen as best serving his/her career needs.

The major subgrouping of the WOW function is entitled **occupational areas**. Occupational areas serve the function of identifying, in general, the world-of-work settings —work establishments, production or service units — where the learner could explore these occupations. In the CMO application they are the Broadcast, Graphic and Line Communications occupations.

The minor subgrouping of the WOW function — the **occupational families** — in many instances transcend the world-of-work settings the learner explored. This is the consequence of forming occupational families upon the basis of occupations that have common (identical or similar) worker function requirements to those of selected **primary occupations**. Primary occupations within a cluster are those job titles identified, in cooperation with Occupational Employment Statistics (OES) Project of DOL, as having high employment potential. Occupational families designed and organized in this manner provide the learner expanded opportunity for future entry into the world of work.

Resources to support the emerging commitment to career education are severely limited. The response of career education-concerned persons to the world-of-work function approach has been most supportive. It would appear that implementation of a total career cluster scheme, similar to that represented in the CMO cluster effort, should provide real cost benefits for career education at the national, state and local levels.

Further information concerning application of the WOW function concept to provide a total cluster scheme for career Awareness and/or career Exploration programs can be obtained from:

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